# APPENDIX A

## Logs of Test Borings

HALEY & ALDRICH

# TEST BORING REPORT

**Boring No. B101 (OW)**

Project PROPOSED FOOD STORE, FOREST AND RIVERSIDE STREET, PORTLAND, ME
Client HANNAFORD BROS. CO.
Contractor MAINE TEST BORINGS, INC.

File No. 29761-001
Sheet No. 1 of 3
Start February 24, 2003
Finish February 25, 2003
Driller M. Porter
H&A Rep. D. Mancinelli
Elevation 77.3
Datum NGVD
Location See Plan

| | Casing | Sampler | Barrel | Drilling Equipment and Procedures |
|---|---|---|---|---|
| Type | HSA | SS | - | Rig Make & Model: Mobile Bombardier |
| Inside Diameter (in.) | 4.25 | 1 3/8 | - | Bit Type: Cutting Head |
| Hammer Weight (lb.) | - | 140 | - | Drill Mud: None |
| Hammer Fall (in.) | - | 30 | - | Casing: HSA |
| | | | | Hoist/Hammer: Winch /Doughnut Hammer |

| Depth (ft.) | SPT[1] | Sample No. & Rec. (in.) | Sample Depth (ft.) | Well Diagram | Elev./Depth (ft.) | USCS Symbol | Visual-Manual Identification and Description (Density/consistency, color, GROUP NAME, max. particle size[2], structure, odor, moisture, optional descriptions, geologic interpretation) | Gravel % Coarse | Gravel % Fine | Sand % Coarse | Sand % Medium | Sand % Fine | % Fines | Field Test Dilatancy | Field Test Toughness | Field Test Plasticity | Field Test Strength |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| 0 | | | | | | | -TOPSOIL/FILL- | | | | | | | | | | |
| | 15<br>29<br>34<br>22 | S1<br>11 | 0.5<br>2.5 | | 76.3<br>1.0 | SP | Very dense brown poorly-graded SAND (SP), mps=1.25 in., no odor, moist, trace gravel, silt<br>-FILL- | 5 | 5 | 5 | 10 | 70 | 5 | | | | |
| | 10<br>6<br>8<br>21 | S2<br>15 | 2.5<br>4.5 | | 74.3<br>3.0<br>73.3 | OL/<br>OH | Stiff gray-brown ORGANIC SOIL (OL/OH), mps<1.0 mm, organic odor, trace root | | | | | | 100 | R | L | L | |
| | | | | | 4.0<br>72.8 | CL | -FORMER TOPSOIL/ORGANIC DEPOSIT-<br>Very stiff gray lean CLAY (CL), mps<1.0 mm, no odor, moist, laminated | | | | | | 100 | N | M | M | |
| 5 | 15<br>29<br>32<br>45 | S3<br>24 | 5.0<br>7.0 | | 4.5 | | Hard olive-brown lean CLAY (CL), mps=.075 mm, no odor, moist, PP=4.0 TSF<br>-MARINE DEPOSIT- | | | | | | 100 | N | M | M | |
| 10 | 6<br>10<br>15<br>18 | S4<br>24 | 10.0<br>12.0 | | | CL | Very stiff olive-brown lean CLAY (CL), mps=.075 mm, no odor, moist, laminated<br>-MARINE DEPOSIT- | | | | | | 100 | N | M | M | |
| 15 | 2<br>6<br>6<br>8 | S5<br>24 | 15.0<br>17.0 | | | | Stiff olive-brown lean CLAY (CL), mps=4.5 mm, no odor, moist, frequent fine sand partings, laminated<br>-MARINE DEPOSIT- | | | | | | 100 | S | M | M | |
| 20 | | | | | | | | | | | | | | | | | |

**Water Level Data**

| Date | Time | Elapsed Time (hr.) | Depth (ft.) to: Bottom of Casing | Bottom of Hole | Water |
|---|---|---|---|---|---|
| 2/24/03 | 1815 | 0.25 | 50.0 | - | - |
| 2/25/03 | 1730 | 11.25 | - | 49.8 | 43.5 |
| 2/26/03 | 0615 | 12.75 | 49.8 | 43.45 | - |

**Sample Identification**

O Open End Rod
T Thin Wall Tube
U Undisturbed Sample
S Split Spoon
G Geoprobe

**Well Diagram**

Riser Pipe
Screen
Filter Sand
Cuttings
Grout
Concrete
Bentonite Seal

**Summary**

Overburden (lin. ft.) 50.0
Rock Cored (lin. ft.) -
Samples 11S

**Boring No. B101 (OW)**

Field Tests: Dilatancy: R-Rapid, S-Slow, N-None
Toughness: L-Low, M-Medium, H-High
Plasticity: N-Nonplastic, L-Low, M-Medium, H-High
Dry Strength: N-None, L-Low, M-Medium, H-High, V-Very High

[1]SPT = Sampler blows per 6 in. [2]Maximum particle size (mm) is determined by direct observation within the limitations of sampler size (in millimeters).

**Note: Soil identification based on visual-manual methods of the USCS as practiced by Haley & Aldrich, Inc.**

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HALEY & ALDRICH

# TEST BORING REPORT

**Boring No.** B101 (OW)
File No. 29761-001
Sheet No. 2 of 3

| Depth (ft.) | SPT[1] | Sample No. & Rec. (in.) | Sample Depth (ft.) | Well Diagram | Elev./Depth (ft.) | USCS Symbol | Visual-Manual Identification and Description (Density/consistency, color, GROUP NAME, max. particle size[2], structure, odor, moisture, optional descriptions, geologic interpretation) | Gravel % Coarse | Gravel % Fine | Sand % Coarse | Sand % Medium | Sand % Fine | % Fines | Field Test Dilatancy | Field Test Toughness | Field Test Plasticity | Field Test Strength |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| 20 | 1<br>5<br>7<br>9 | S6<br>24 | 20.0<br>22.0 | | | CL | Stiff olive-brown lean CLAY (CL), mps < .5 mm, no odor, moist frequent fine sand partings, occasional fine sand pockets < 3.0 in.<br>-MARINE DEPOSIT- | | | | | 10 | 90 | S | M | M | |
| | | | | | 52.3 | | | | | | | | | | | | |
| 25 | 5<br>13<br>27<br>31 | S7<br>15 | 25.0<br>27.0 | | 25.0 | SP | Dense tan poorly-graded SAND (SP), interbedded with lean clay (CL), mps < .5 mm, no odor, dry<br>-MARINE DEPOSIT- | | | | | 80 | 20 | | | | |
| 30 | 5<br>13<br>17<br>25 | S8<br>18 | 30.0<br>32.0 | | | SP | Medium dense poorly-graded SAND (SP), mps < .5 mm, no odor, dry, weakly stratified<br>-MARINE DEPOSIT- | | | | | 100 | | | | | |
| 35 | 5<br>12<br>17<br>25 | S9<br>16 | 35.0<br>37.0 | | | SP | Medium dense poorly-graded SAND (SP), mps < .5 mm, no odor, dry, weakly stratified<br>-MARINE DEPOSIT- | | | | | 100 | | | | | |
| 40 | 5<br>13<br>21<br>24 | S10<br>19 | 40.0<br>42.0 | | | SP | Dense light brown poorly-graded SAND (SP), mps < .5 mm, no odor, dry, stratified<br>-MARINE DEPOSIT- | | | | | 100 | | | | | |
| 45 | WOR<br>7<br>11<br>16 | S11<br>15 | 45.0<br>47.0 | | | SP | Medium dense light brown poorly-graded SAND (SP), mps < .5 mm, no odor, wet, stratified<br>-MARINE DEPOSIT-<br><br>Note: advanced augers to 50.0 ft., no sample<br><br>Install Observation Well at 49.8 ft. | | | | | 100 | | | | | |

[1]SPT = Sampler blows per 6 in. [2]Maximum particle size (mm) is determined by direct observation within the limitations of sampler size.

**NOTE: Soil identification based on visual-manual methods of the USCS as practiced by Haley & Aldrich, Inc.**

HALEY & ALDRICH

# TEST BORING REPORT

**Boring No.** B101 (OW)
File No. 29761-001
Sheet No. 3 of 3

| Depth (ft.) | SPT[1] | Sample No. & Rec. (in.) | Sample Depth (ft.) | Well Diagram | Elev./Depth (ft.) | USCS Symbol | Visual-Manual Identification and Description (Density/consistency, color, GROUP NAME, max. particle size[2], structure, odor, moisture, optional descriptions, geologic interpretation) | Gravel % Coarse | Gravel % Fine | Sand % Coarse | Sand % Medium | Sand % Fine | % Fines | Field Test Dilatancy | Field Test Toughness | Field Test Plasticity | Field Test Strength |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| | | | | | 27.3 | | | | | | | | | | | | |
| 50 | | | | | 50.0 | | BOTTOM OF EXPLORATION 50.0 FT. | | | | | | | | | | |

[1]SPT = Sampler blows per 6 in. [2]Maximum particle size (mm) is determined by direct observation within the limitations of sampler size.

**NOTE: Soil identification based on visual-manual methods of the USCS as practiced by Haley & Aldrich, Inc.**

**Boring No.** B101 (OW)

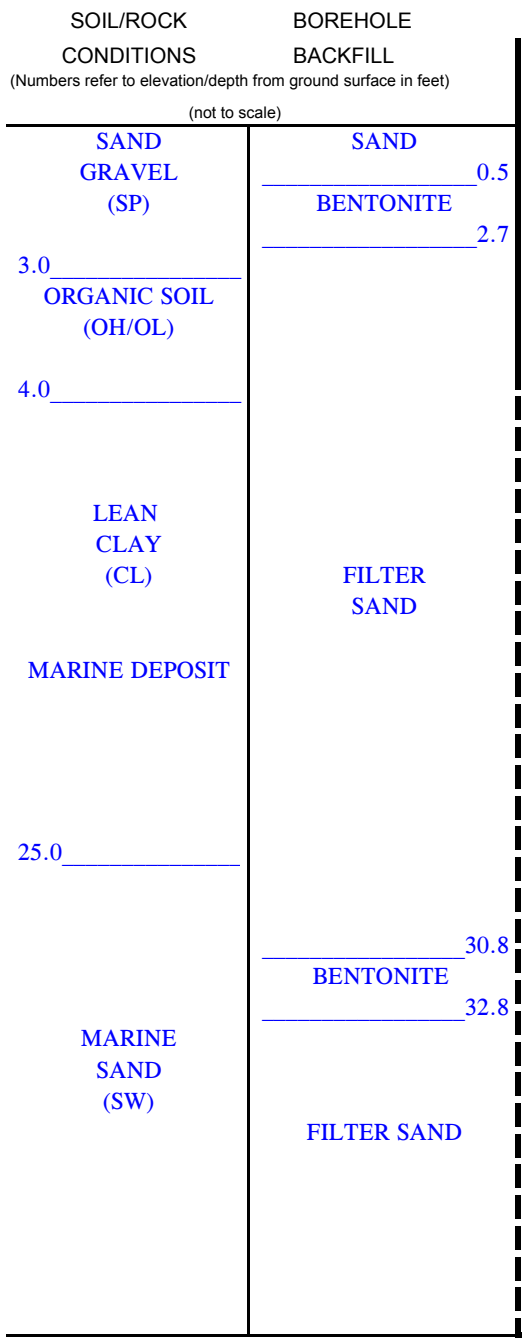
# OBSERVATION WELL INSTALLATION REPORT

HALEY & ALDRICH

| | |
|---|---|
| Project | PROPOSED FOOD STORE |
| City/State | PORTLAND, MAINE |
| Client | HANNAFORD BROS. CO. |
| Contractor | MAINE TEST BORINGS, INC. |
| Driller | MIKE PORTER |

| | |
|---|---|
| Observation Well | MW101 |
| Test Boring | B-101 |
| Installation Date | 25-Feb-03 |
| Location | See Plan |
| H&A File No. | 29761-000 |
| H&A Rep. | D. Mancinelli |

Ground El. 77.3
El. Datum NGVD




Type of protective cover/lock: Ground Pipe Cap/Lock

Height of top of roadway box above ground surface: 3.0 ft

Height of top of riser pipe above ground surface: 2.9 ft

Type of protective casing: Covered Pipe

Length: 5.3 ft

Inside diameter: 3.0 in.

Depth of bottom of casing: 2.3 ft

Seals:

| Type | Depth to top (ft) | Thickness (ft) |
|---|---|---|
| Bentonite | 0.5 | 2.2 |
| Bentonite | 30.8 | 2.0 |
| | | |
| | | |

Type of riser pipe: Sch 40 PVC

Inside diameter of riser pipe: 2.0 in.

Type of backfill around riser: Filter Sand

Diameter of borehole: 4.0 in.

Depth of top of well screen: 34.8 ft

Type of point or manufacturer: Machine Slotted

Screen gauge or size of openings: 0.010 in.

Diameter of well screen: 2.0 in.

Type of backfill around screen: Filter Sand

Depth of bottom of well screen: 49.8 ft

Depth of bottom of silt trap:

Depth of bottom of borehole: 50.0 ft

(Depths refer to ground surface)

Remarks: 22 BAGS OF SAND/2 BAGS BENTONITE CHIPS

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HALEY & ALDRICH

# TEST BORING REPORT

**Boring No. B102**

Project PROPOSED FOOD STORE, FOREST AND RIVERSIDE STREET, PORTLAND, ME
Client HANNAFORD BROS. CO.
Contractor MAINE TEST BORINGS, INC.

File No. 29761-001
Sheet No. 1 of 1
Start February 24, 2003
Finish February 24, 2003
Driller M. Porter
H&A Rep. D. Mancinelli
Elevation 80.1
Datum NGVD
Location See Plan

| | Casing | Sampler | Barrel | Drilling Equipment and Procedures |
|---|---|---|---|---|
| Type | HSA | SS | - | Rig Make & Model: Mobile Bombardier |
| Inside Diameter (in.) | 2.5 | 1 3/8 | - | Bit Type: Cutting Head |
| Hammer Weight (lb.) | - | 140 | - | Drill Mud: None |
| Hammer Fall (in.) | - | 30 | - | Casing: HSA |
| | | | | Hoist/Hammer: Winch /Doughnut Hammer |

| Depth (ft.) | SPT[1] | Sample No. & Rec. (in.) | Sample Depth (ft.) | Well Diagram | Elev./Depth (ft.) | USCS Symbol | Visual-Manual Identification and Description (Density/consistency, color, GROUP NAME, max. particle size[2], structure, odor, moisture, optional descriptions, geologic interpretation) | Gravel % Coarse | Gravel % Fine | Sand % Coarse | Sand % Medium | Sand % Fine | % Fines | Field Test Dilatancy | Field Test Toughness | Field Test Plasticity | Field Test Strength |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| 0 | | | | | | SP-SM | Dense gray-brown poorly-graded SAND with silt and gravel (SP-SM), mps=1.5 in., no odor, dry | 10 | 15 | 15 | 15 | 35 | 10 | | | | |
| | 11 24 24 22 | S1 20 | 0.5 2.5 | | 78.6 1.5 | | -FILL- | | | | | | | | | | |
| | | | | | | | Yellow-brown poorly-graded SAND (SP), mps<0.5 mm, no odor, moist, bottom 8.0 in., of recovery | | | 10 | 10 | 80 | | | | | |
| | 20 22 26 34 | S2 5 | 2.5 4.5 | | | SP | -FILL- | | | 10 | 10 | 80 | | | | | |
| | | | | | | | Yellow-brown poorly-graded SAND (SP), mps<0.5 mm, trace gravel, no odor, wet | | | | | | | | | | |
| | | | | | | | -FILL- | | | | | | | | | | |
| 5 | 4 28 31 35 | S3 15 | 4.5 6.5 | | 75.1 5.0 | CL | Hard olive-brown lean CLAY (CL), mps=0.75 mm, no odor, dry to moist | | | | | | 100 | N | M | M | |
| | | | | | | | -MARINE DEPOSIT- | | | | | | | | | | |
| 10 | 10 13 15 20 | S4 24 | 10.0 12.0 | | 68.1 12.0 | CL | Very stiff gray lean CLAY (CL), mps<2.0 mm, no odor, moist, occasional fine to medium sand layer, PP=2.0 TSF | | | | | | | | | | |
| | | | | | | | -MARINE DEPOSIT- | | | | | | | | | | |
| | | | | | | | BOTTOM OF EXPLORATION 12.0 FT. | | | | | | | | | | |

**Water Level Data**

| Date | Time | Elapsed Time (hr.) | Depth (ft.) to: Bottom of Casing | Bottom of Hole | Water |
|---|---|---|---|---|---|
| 2/24/03 | 1400 | 0.5 | - | 11.9 | 10.5 |

**Sample Identification**

O Open End Rod
T Thin Wall Tube
U Undisturbed Sample
S Split Spoon
G Geoprobe

**Well Diagram**

Riser Pipe
Screen
Filter Sand
Cuttings
Grout
Concrete
Bentonite Seal

**Summary**

Overburden (lin. ft.) 12.0
Rock Cored (lin. ft.) -
Samples 4S

**Boring No. B102**

Field Tests: Dilatancy: R-Rapid, S-Slow, N-None
Toughness: L-Low, M-Medium, H-High
Plasticity: N-Nonplastic, L-Low, M-Medium, H-High
Dry Strength: N-None, L-Low, M-Medium, H-High, V-Very High

[1]SPT = Sampler blows per 6 in. [2]Maximum particle size (mm) is determined by direct observation within the limitations of sampler size (in millimeters).

**Note: Soil identification based on visual-manual methods of the USCS as practiced by Haley & Aldrich, Inc.**

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HALEY & ALDRICH

# TEST BORING REPORT

**Boring No. B103**

Project PROPOSED FOOD STORE, FOREST AND RIVERSIDE STREET, PORTLAND, ME
Client HANNAFORD BROS. CO.
Contractor MAINE TEST BORINGS, INC.

File No. 29761-001
Sheet No. 1 of 1
Start February 21, 2003
Finish February 21, 2003
Driller M. Porter
H&A Rep. D. Mancinelli
Elevation 78.8
Datum NGVD
Location See Plan

| | Casing | Sampler | Barrel | Drilling Equipment and Procedures |
|---|---|---|---|---|
| Type | HSA | SS | - | Rig Make & Model: Mobile Bombardier |
| Inside Diameter (in.) | 2.5 | 1 3/8 | - | Bit Type: Cutting Head |
| Hammer Weight (lb.) | - | 140 | - | Drill Mud: None |
| Hammer Fall (in.) | - | 30 | - | Casing: HSA |
| | | | | Hoist/Hammer: Winch /Doughnut Hammer |

| Depth (ft.) | SPT[1] | Sample No. & Rec. (in.) | Sample Depth (ft.) | Well Diagram | Elev./Depth (ft.) | USCS Symbol | Visual-Manual Identification and Description (Density/consistency, color, GROUP NAME, max. particle size[2], structure, odor, moisture, optional descriptions, geologic interpretation) | Gravel % Coarse | Gravel % Fine | Sand % Coarse | Sand % Medium | Sand % Fine | % Fines | Field Test Dilatancy | Field Test Toughness | Field Test Plasticity | Field Test Strength |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| 0 | | | | | | SP | Very dense black poorly-graded SAND with gravel (SP), mps=1.0 in., no odor, dry, 5% brick, 5% ash, trace plastic | 5 | 10 | 15 | 20 | 30 | 5 | | | | |
| | 77<br>70<br>74<br>85 | S1<br>17 | 0.5<br>2.5 | | | | -FILL- | | | | | | | | | | |
| | | | | | 76.3 | | | | | | | | | | | | |
| | 28<br>36<br>21<br>24 | S2<br>15 | 2.5<br>4.5 | | 2.5 | SP | Very dense gray-brown poorly-graded SAND (SP), mps<5.0 mm, no odor, moist | | | 5 | 15 | 75 | 5 | | | | |
| | | | | | | | -FILL- | | | | | | | | | | |
| | | | | | 74.3 | | | | | | | | | | | | |
| 5 | 11<br>16<br>21<br>29 | S3<br>22 | 4.5<br>6.5 | | 4.5 | CL | Hard olive-brown lean CLAY (CL), mps=0.75 mm, no odor, moist, PP=3.0 TSF | | | | | | 100 | N | M | H | H |
| | | | | | | | -MARINE DEPOSIT- | | | | | | | | | | |
| | 9<br>16<br>21<br>31 | S4<br>24 | 6.5<br>8.5 | | | | Hard olive-brown lean CLAY (CL), mps=0.75 mm, no odor, moist, PP=3.0 TSF | | | | | | 100 | N | M | H | H |
| | | | | | | | -MARINE DEPOSIT- | | | | | | | | | | |
| 10 | 6<br>9<br>13<br>20 | S5<br>24 | 10.0<br>12.0 | | | CL | Very stiff olive-brown lean CLAY (CL), mps=0.75 mm, no odor, moist | | | | | | 100 | N | M | H | |
| | | | | | | | -MARINE DEPOSIT- | | | | | | | | | | |
| | | | | | 66.8<br>12.0 | | BOTTOM OF EXPLORATION 12.0 FT | | | | | | | | | | |

**Water Level Data**

| Date | Time | Elapsed Time (hr.) | Depth (ft.) to: Bottom of Casing | Bottom of Hole | Water |
|---|---|---|---|---|---|
| 2/21/03 | 1030 | 0.25 | - | 8.5 | Dry |

**Sample Identification**

O Open End Rod
T Thin Wall Tube
U Undisturbed Sample
S Split Spoon
G Geoprobe

**Well Diagram**

Riser Pipe
Screen
Filter Sand
Cuttings
Grout
Concrete
Bentonite Seal

**Summary**

Overburden (lin. ft.) 12.0
Rock Cored (lin. ft.) -
Samples 5S

**Boring No. B103**

Field Tests: Dilatancy: R-Rapid, S-Slow, N-None
Toughness: L-Low, M-Medium, H-High
Plasticity: N-Nonplastic, L-Low, M-Medium, H-High
Dry Strength: N-None, L-Low, M-Medium, H-High, V-Very High

[1]SPT = Sampler blows per 6 in. [2]Maximum particle size (mm) is determined by direct observation within the limitations of sampler size (in millimeters).

**Note: Soil identification based on visual-manual methods of the USCS as practiced by Haley & Aldrich, Inc.**

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HALEY & ALDRICH

# TEST BORING REPORT

**Boring No. B104**

Project PROPOSED FOOD STORE, FOREST AND RIVERSIDE STREET, PORTLAND, ME
Client HANNAFORD BROS. CO.
Contractor MAINE TEST BORINGS, INC.

File No. 29761-001
Sheet No. 1 of 1
Start February 21, 2003
Finish February 21, 2003
Driller M. Porter
H&A Rep. D. Mancinelli
Elevation 77.5
Datum NGVD
Location See Plan

| | Casing | Sampler | Barrel | Drilling Equipment and Procedures |
|---|---|---|---|---|
| Type | HSA | SS | - | Rig Make & Model: Mobile Bombardier |
| Inside Diameter (in.) | 2.5 | 1 3/8 | - | Bit Type: Cutting Head |
| Hammer Weight (lb.) | - | 140 | - | Drill Mud: None |
| Hammer Fall (in.) | - | 30 | - | Casing: HSA |
| | | | | Hoist/Hammer: Winch /Doughnut Hammer |

| Depth (ft.) | SPT[1] | Sample No. & Rec. (in.) | Sample Depth (ft.) | Well Diagram | Elev./Depth (ft.) | USCS Symbol | Visual-Manual Identification and Description (Density/consistency, color, GROUP NAME, max. particle size[2], structure, odor, moisture, optional descriptions, geologic interpretation) | Gravel % Coarse | Gravel % Fine | Sand % Coarse | Sand % Medium | Sand % Fine | % Fines | Field Test Dilatancy | Field Test Toughness | Field Test Plasticity | Field Test Strength |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| 0 | | | | | | | Note: auger spoils and action indicated dense sand and gravel to about 2.0 ft. | | | | | | | | | | |
| | | | | | 75.5 | | | | | | | | | | | | |
| | 4<br>9<br>6<br>7 | S1<br>18 | 2.0<br>4.0 | | 2.0 | | Stiff gray elastic SILT (MH), mps < 2.0 mm, slight organic odor, moist, trace ash, root, wood particles, medium to fine sand<br>-FILL- | | | | | | 100 | S | M | M | |
| | 19<br>30<br>24<br>20 | S2<br>22 | 4.0<br>6.0 | | 72.5 | | Hard gray elastic SILT (MH), mps < 2.0 mm, slight organic odor, moist, trace ash, root, wood particles, medium to fine sand, higher sand %<br>-FILL- | | | | 5 | 5 | 90 | | | | |
| 5 | | | | | 5.0 | SP-SM | Dense yellow-brown poorly-graded SAND with silt (SP-SM), mps < .5 mm, no odor, dry<br>-MARINE DEPOSIT- | | | | | 90 | 10 | | | | |
| | 6<br>12<br>9<br>11 | S3<br>10 | 6.0<br>8.0 | | 70.5 | | Dense yellow-brown poorly-graded SAND with silt (SP-SM), mps < .5 mm, no odor, dry | | | | | 90 | 10 | | | | |
| | | | | | 7.0 | SM | -MARINE DEPOSIT- | | | | | 75 | 25 | | | | |
| | 9<br>14<br>19<br>24 | S4<br>23 | 8.0<br>10.0 | | 69.0 | | Medium dense gray silty SAND (SM), mps < .5 mm, no odor, dry to moist | | | | | | | | | | |
| | | | | | 8.5 | MH | Hard olive-brown, elastic SILT (MH), mps=0.75 mm, no odor, moist<br>-MARINE DEPOSIT- | | | | | | 100 | S | L-M | M | |
| 10 | 7<br>12<br>16<br>19 | S5<br>24 | 10.0<br>12.0 | | 67.5 | | | | | | | | | | | | |
| | | | | | 10.0 | CL | Very stiff olive-brown lean CLAY (CL), mps=0.75, no odor, moist, occasional silt laminae<br>-MARINE DEPOSIT- | | | | | | 100 | N | M | M | |
| | | | | | 65.5 | | | | | | | | | | | | |
| | | | | | 12.0 | | BOTTOM OF EXPLORATION 12.0 FT. | | | | | | | | | | |

| Water Level Data | | | | | |
|---|---|---|---|---|---|
| Date | Time | Elapsed Time (hr.) | Depth (ft.) to: Bottom of Casing | Bottom of Hole | Water |
| 2/21/03 | 1200 | 0.25 | - | 10.5 | Dry |

| Sample Identification | |
|---|---|
| O | Open End Rod |
| T | Thin Wall Tube |
| U | Undisturbed Sample |
| S | Split Spoon |
| G | Geoprobe |

| Well Diagram | |
|---|---|
| | Riser Pipe |
| | Screen |
| | Filter Sand |
| | Cuttings |
| | Grout |
| | Concrete |
| | Bentonite Seal |

| Summary | |
|---|---|
| Overburden (lin. ft.) | 12.0 |
| Rock Cored (lin. ft.) | - |
| Samples | 5S |

**Boring No. B104**

Field Tests: Dilatancy: R-Rapid, S-Slow, N-None; Toughness: L-Low, M-Medium, H-High; Plasticity: N-Nonplastic, L-Low, M-Medium, H-High; Dry Strength: N-None, L-Low, M-Medium, H-High, V-Very High

[1]SPT = Sampler blows per 6 in. [2]Maximum particle size (mm) is determined by direct observation within the limitations of sampler size (in millimeters).

**Note: Soil identification based on visual-manual methods of the USCS as practiced by Haley & Aldrich, Inc.**

USCS_TB4 USCSLIB4.GLB USCSTB+CORE4.GDT G:\PROJECTS\29761\0011\GINT\29761001TB.GPJ.GPJ Aug 30, 04

HALEY & ALDRICH

# TEST BORING REPORT

**Boring No. B105**

Project PROPOSED FOOD STORE, FOREST AND RIVERSIDE STREET, PORTLAND, ME
Client HANNAFORD BROS. CO.
Contractor MAINE TEST BORINGS, INC.

File No. 29761-001
Sheet No. 1 of 1
Start February 21, 2003
Finish February 21, 2003
Driller M. Porter
H&A Rep. D. Mancinelli
Elevation 80.8
Datum NGVD
Location See Plan

| | Casing | Sampler | Barrel | Drilling Equipment and Procedures |
|---|---|---|---|---|
| Type | HSA | SS | - | Rig Make & Model: Mobile Bombardier |
| Inside Diameter (in.) | 2.5 | 1 3/8 | - | Bit Type: Cutting Head |
| Hammer Weight (lb.) | - | 140 | - | Drill Mud: None |
| Hammer Fall (in.) | - | 30 | - | Casing: HSA |
| | | | | Hoist/Hammer: Winch /Doughnut Hammer |

| Depth (ft.) | SPT[1] | Sample No. & Rec. (in.) | Sample Depth (ft.) | Well Diagram | Elev./Depth (ft.) | USCS Symbol | Visual-Manual Identification and Description (Density/consistency, color, GROUP NAME, max. particle size[2], structure, odor, moisture, optional descriptions, geologic interpretation) | Gravel % Coarse | Gravel % Fine | Sand % Coarse | Sand % Medium | Sand % Fine | % Fines | Field Test Dilatancy | Field Test Toughness | Field Test Plasticity | Field Test Strength |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| 0 | | | | | | ML | Stiff gray SILT with sand (ML), mps=0.5 mm, organic odor, moist, wood pieces 5% | | | 5 | 5 | 15 | 70 | | | | |
| | 15 | S1 | 0.5 | | 79.8 | | | | | | | | | | | | |
| | 20 | 14 | 2.5 | | 1.0 | SM | -TOPSOIL- | | | 5 | 10 | 70 | 15 | | | | |
| | 21 | | | | | | Dense brown silty SAND (SM), mps=0.25 in., no odor, dry, trace gravel | | | | | | | | | | |
| | 30 | | | | | | -FILL- | | | | | | | | | | |
| 5 | | | | | 75.8 | | | | | | | | | | | | |
| | 7 | S2 | 5.0 | | 5.0 | MH | Hard gray elastic SILT with sand (MH), mps<7.0 mm, slight organic odor, moist, trace wood fibers, sample appears disturbed | | 5 | | | 20 | 75 | S | L | M | |
| | 15 | 17 | 7.0 | | | | -FILL- | | | | | | | | | | |
| | 30 | | | | | | | | | | | | | | | | |
| | 26 | | | | | | | | | | | | | | | | |
| 10 | 5 | S3 | 10.0 | | | MH | Stiff gray elastic SILT (MH), mps=0.5 in., slight organic odor, moist, trace gravel, wood pieces 5%, trace sand | | | | | | 95 | S | L | M | |
| | 8 | 12 | 11.2 | | | | | | | | | | | | | | |
| | ~~100/.2~~ | | | | | | Stiff dark brown elastic SILT (MH), mps<5.0 mm, slight organic odor, moist, 5% wood pieces, trace sand | | | | | | 95 | S | L | M | |
| | 4 | S4 | 11.5 | | | | | | | | | | | | | | |
| | 7 | 10 | 13.5 | | | | Stiff brown elastic SILT (MH), mps=2.0 mm, slight organic odor, moist, 10% wood pieces, trace sand | | | | | | 95 | S | L | M | |
| | 7 | | | | | | | | | | | | | | | | |
| | 9 | | | | 67.3 | | | | | | | | | | | | |
| | 13 | S5 | 13.5 | | 13.5 | CL | Very stiff gray lean CLAY (CL), mps<.075 mm, no odor, moist | | | | | | 100 | N | M | M | |
| | 5 | 7 | 15.5 | | | | -MARINE DEPOSIT- | | | | | | | | | | |
| 15 | 6 | | | | | | | | | | | | | | | | |
| | 6 | | | | | | | | | | | | | | | | |
| | 6 | S6 | 15.5 | | | | | | | | | | | | | | |
| | 10 | 3 | 17.5 | | | | | | | | | | | | | | |
| | 13 | | | | | | | | | | | | | | | | |
| | 12 | | | | 63.3 | | | | | | | | | | | | |
| | | | | | 17.5 | | BOTTOM OF EXPLORATION 17.5 FT. | | | | | | | | | | |
| | | | | | | | Note: moved boring 3.0 ft. to NW of original location due to wood affecting sampling. New boring 105 A, | | | | | | | | | | |

**Water Level Data**

| Date | Time | Elapsed Time (hr.) | Depth (ft.) to: Bottom of Casing | Bottom of Hole | Water |
|---|---|---|---|---|---|
| 2/21/03 | 0800 | 0.25 | 13.5 | 14.5 | Dry |

**Sample Identification**

O Open End Rod
T Thin Wall Tube
U Undisturbed Sample
S Split Spoon
G Geoprobe

**Well Diagram**

Riser Pipe
Screen
Filter Sand
Cuttings
Grout
Concrete
Bentonite Seal

**Summary**

Overburden (lin. ft.) 17.5
Rock Cored (lin. ft.) -
Samples 6S

**Boring No. B105**

Field Tests: Dilatancy: R-Rapid, S-Slow, N-None
Toughness: L-Low, M-Medium, H-High
Plasticity: N-Nonplastic, L-Low, M-Medium, H-High
Dry Strength: N-None, L-Low, M-Medium, H-High, V-Very High

[1]SPT = Sampler blows per 6 in. [2]Maximum particle size (mm) is determined by direct observation within the limitations of sampler size (in millimeters).

**Note: Soil identification based on visual-manual methods of the USCS as practiced by Haley & Aldrich, Inc.**

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# TEST BORING REPORT

**Boring No. B106**

Project PROPOSED FOOD STORE, FOREST AND RIVERSIDE STREET, PORTLAND, ME
Client HANNAFORD BROS. CO.
Contractor MAINE TEST BORINGS, INC.

File No. 29761-001
Sheet No. 1 of 2
Start February 25, 2003
Finish February 25, 2003
Driller M. Porter
H&A Rep. D. Mancinelli
Elevation 76.8
Datum NGVD
Location See Plan

| | Casing | Sampler | Barrel | Drilling Equipment and Procedures |
|---|---|---|---|---|
| Type | HSA | SS | - | Rig Make & Model: Mobile Bombardier |
| Inside Diameter (in.) | 4.25 | 1 3/8 | - | Bit Type: Cutting Head |
| Hammer Weight (lb.) | - | 140 | - | Drill Mud: None |
| Hammer Fall (in.) | - | 30 | - | Casing: HSA |
| | | | | Hoist/Hammer: Winch /Doughnut Hammer |

| Depth (ft.) | SPT[1] | Sample No. & Rec. (in.) | Sample Depth (ft.) | Well Diagram | Elev./Depth (ft.) | USCS Symbol | Visual-Manual Identification and Description (Density/consistency, color, GROUP NAME, max. particle size[2], structure, odor, moisture, optional descriptions, geologic interpretation) | Gravel % Coarse | Gravel % Fine | Sand % Coarse | Sand % Medium | Sand % Fine | % Fines | Field Test Dilatancy | Field Test Toughness | Field Test Plasticity | Field Test Strength |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| 0 | | | | | | | | | | | | | | | | | |
| | 8<br>12<br>19<br>24 | S1<br>14 | 0.5<br>2.5 | | | MH | Hard gray-brown elastic silt (MH), mps < 0.8 mm, slight organic odor, dry to moist, trace roots, gravel, sample appears disturbed, trace clay<br>-FILL | | | | | | 100 | | | | |
| | 9<br>13<br>15<br>20 | S2<br>8 | 2.5<br>4.5 | | | | Very stiff gray elastic SILT (MH), mps 0.25 in., slight organic odor, moist, trace fine to medium sand, trace fine gravel, trace wood fragments, roots<br>-FILL- | | | | 5 | 5 | 90 | S | L | M | |
| 5 | 2<br>8<br>6<br>8 | S3<br>10 | 4.5<br>6.5 | | | | Stiff gray elastic SILT (MH), mps 0.25 in., slight organic odor, moist, trace fine to medium sand, trace fine gravel, trace wood fragments, roots<br>-FILL- | | | | 5 | 5 | 90 | S | L | M | |
| | 4<br>14<br>50/.1 | S4<br>4 | 6.5<br>7.6 | | | MH | Very stiff gray elastic SILT (MH), mps < 2.0 mm, very slight organic odor, moist, trace fine to medium sand, trace wood pieces, numerous roots<br>-FILL | | | | | | 100 | S | L | M | |
| | | | | | 68.3 | | | | | | | | | | | | |
| | 1<br>5<br>7<br>8 | S5<br>9 | 8.5<br>10.5 | | 8.5 | CL | Note: obstruction from 7.6-8.5 ft. attempted spoon at 8.5 ft., did not advance, moved boring 5.0 ft. NW<br>Stiff gray to gray-brown lean CLAY (CL), mps=0.25 in., no odor, moist, trace sand, trace fine gravel, wood pieces, sample appears disturbed | | | | | | 100 | S | M | M |
| 10 | 1<br>3<br>5<br>7 | S6<br>12 | 10.5<br>12.5 | | | | -FILL-<br>Medium stiff gray lean CLAY with sand (CL), mps < 5.0 mm, very slight organic odor, moist, trace wood fragments, roots, brick particles, sample appears disturbed<br>-FILL- | | | | 5 | 10 | 85 | | | | |
| | 1<br>4<br>4<br>7 | S7<br>14 | 12.5<br>14.5 | | | CL | Medium stiff gray-brown sandy lean CLAY (CL), mps < 5.0 mm, slight organic odor, moist, trace wood fragments, roots<br>-FILL- | | | 5 | 15 | 20 | 70 | | | | |
| 15 | 5<br>4<br>2<br>1 | S8<br>3 | 14.5<br>16.5 | | | | Medium stiff gray-brown sandy lean CLAY (CL), mps < 19.0 mm, slight organic odor, moist, less wood fragments, trace fine gravel, roots<br>-FILL- | | | 5 | 5 | 20 | 70 | | | | |
| | | | | | 60.3 | | | | | | | | | | | | |
| | W<br>O<br>R/18<br>WOH | S9<br>2 | 16.5<br>18.5 | | 16.5 | ML | Very soft brown SILT with sand (ML), mps < .5 mm, slight organic odor, dry, trace roots<br>Note: possible void | | | | | 15 | 85 | | | | |
| | | | | | 58.3 | | -FILL- | | | | | | | | | | |
| | 1<br>19<br>6 | S10<br>4 | 18.5<br>20.5 | | 18.5 | MH | Very stiff brown elastic SILT with sand (MH), mps < 5.0 mm, very slight organic odor, moist to dry, trace wood pieces<br>-FILL- | | | | 5 | 15 | 80 | | | | |
| 20 | | | | | | | | | | | | | | | | | |

**Water Level Data**

| Date | Time | Elapsed Time (hr.) | Depth (ft.) to: Bottom of Casing | Bottom of Hole | Water |
|---|---|---|---|---|---|
| 2/25/03 | 1530 | 0.5 | - | 32.5 | Dry |

**Sample Identification**

O Open End Rod
T Thin Wall Tube
U Undisturbed Sample
S Split Spoon
G Geoprobe

**Well Diagram**

Riser Pipe
Screen
Filter Sand
Cuttings
Grout
Concrete
Bentonite Seal

**Summary**

Overburden (lin. ft.) 32.5
Rock Cored (lin. ft.) -
Samples 16S

**Boring No. B106**

Field Tests: Dilatancy: R-Rapid, S-Slow, N-None
Toughness: L-Low, M-Medium, H-High
Plasticity: N-Nonplastic, L-Low, M-Medium, H-High
Dry Strength: N-None, L-Low, M-Medium, H-High, V-Very High

[1]SPT = Sampler blows per 6 in. [2]Maximum particle size (mm) is determined by direct observation within the limitations of sampler size (in millimeters).

**Note: Soil identification based on visual-manual methods of the USCS as practiced by Haley & Aldrich, Inc.**

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# TEST BORING REPORT

**Boring No.** B106
File No. 29761-001
Sheet No. 2 of 2

| Depth (ft.) | SPT[1] | Sample No. & Rec. (in.) | Sample Depth (ft.) | Well Diagram | Elev./Depth (ft.) | USCS Symbol | Visual-Manual Identification and Description (Density/consistency, color, GROUP NAME, max. particle size[2], structure, odor, moisture, optional descriptions, geologic interpretation) | Gravel % Coarse | Gravel % Fine | Sand % Coarse | Sand % Medium | Sand % Fine | % Fines | Field Test Dilatancy | Field Test Toughness | Field Test Plasticity | Field Test Strength |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| 20 | 7 | | | | | | | | | | | | | | | | |
| | 2<br>6<br>4<br>7 | S11<br>3 | 20.5<br>22.5 | | | | Stiff brown elastic SILT with sand (MH), mps < 5.0 mm, very slight organic odor, moist to dry, trace wood pieces<br>-FILL- | | | | 5 | 10 | 85 | | | | |
| | | | | | 54.3 | | | | | | | | | | | | |
| | 1<br>3<br>5<br>8 | S12<br>15 | 22.5<br>24.5 | | 22.5 | MH | Medium stiff gray sandy elastic SILT (ML), mps < 19.0 mm, no odor, moist, trace fine gravel<br>-FILL- | | | 5 | 5 | 20 | 70 | S | L | M | |
| 25 | 10<br>8<br>24<br>47 | S13<br>10 | 24.5<br>26.5 | | | | Hard gray sandy elastic SILT (MH), mps < 37.0 mm, no odor, moist, trace wood fragments | | | 5 | 5 | 25 | 65 | S | L | L/M | |
| | | | | | 50.3 | | | | | | | | | | | | |
| | 17<br>27<br>52<br>35 | S14<br>8 | 26.5<br>28.5 | | 26.5 | SM | Very dense gray-brown silty SAND (SM), mps < 25 mm, no odor, dry to moist, trace wood fragments<br>-FILL- | | 5 | 10 | 10 | 50 | 25 | | | | |
| | | | | | 48.3 | | | | | | | | | | | | |
| | 5<br>8<br>9<br>13 | S15<br>14 | 28.5<br>30.5 | | 28.5 | SW | Medium dense gray-brown well-graded SAND(SW), mps < 50 mm, no odor, moist, occasional clay laminae<br>-GLACIAL STREAM DEPOSIT- | | 5 | 10 | 15 | 65 | 5 | | | | |
| 30 | 7<br>14<br>18<br>11 | S16<br>12 | 30.5<br>32.5 | | | SW | Medium dense gray-brown well-graded SAND (SW), mps < 38 mm, no odor, moist to dry, occasional clay pocket<br>-GLACIAL STREAM DEPOSIT- | | 5 | 15 | 15 | 60 | 5 | | | | |
| | | | | | 44.3 | | | | | | | | | | | | |
| | | | | | 32.5 | | BOTTOM OF EXPLORATION 32.5 FT. | | | | | | | | | | |

[1]SPT = Sampler blows per 6 in. [2]Maximum particle size (mm) is determined by direct observation within the limitations of sampler size.

**NOTE: Soil identification based on visual-manual methods of the USCS as practiced by Haley & Aldrich, Inc.**

# TEST BORING REPORT

**Boring No. B107**

Project PROPOSED FOOD STORE, FOREST AND RIVERSIDE STREET, PORTLAND, ME
Client HANNAFORD BROS. CO.
Contractor MAINE TEST BORINGS, INC.

File No. 29761-001
Sheet No. 1 of 2
Start February 20, 2003
Finish February 20, 2003
Driller M. Porter
H&A Rep. D. Mancinelli
Elevation 54.9
Datum NGVD
Location See Plan

| | Casing | Sampler | Barrel | Drilling Equipment and Procedures |
|---|---|---|---|---|
| Type | HSA | SS | - | Rig Make & Model: Mobile Bombardier |
| Inside Diameter (in.) | 2.5 | 1 3/8 | - | Bit Type: Cutting Head |
| Hammer Weight (lb.) | - | 140 | - | Drill Mud: None |
| Hammer Fall (in.) | - | 30 | - | Casing: HSA |
| | | | | Hoist/Hammer: Winch /Doughnut Hammer |

| Depth (ft.) | SPT[1] | Sample No. & Rec. (in.) | Sample Depth (ft.) | Well Diagram | Elev./Depth (ft.) | USCS Symbol | Visual-Manual Identification and Description (Density/consistency, color, GROUP NAME, max. particle size[2], structure, odor, moisture, optional descriptions, geologic interpretation) | Gravel % Coarse | Gravel % Fine | Sand % Coarse | Sand % Medium | Sand % Fine | % Fines | Field Test Dilatancy | Field Test Toughness | Field Test Plasticity | Field Test Strength |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| 0 | | | | | | | Note: auger thru frost before attempt of first sample | | | | | | | | | | |
| | 5<br>3<br>4<br>5 | S1<br>12 | 2.0<br>4.0 | | | SM | Loose brown silty SAND (SM), mps=0.25 in., no odor, dry, 5% glass, 5% wood pieces, trace fine gravel<br>-FILL- | | | | | 60 | 25 | | | | |
| | 5<br>6<br>12<br>9 | S2<br>5 | 4.0<br>6.0 | | | | Medium dense brown silty SAND (SM), mps=0.75 in., no odor, moist, 5% brick fragment, 5% concrete pieces, 5% coarse to fine gravel, 5% peat<br>-FILL- | | | | | 50 | 30 | | | | |
| 5 | 5<br>4<br>4<br>8 | S3<br>3 | 6.0<br>8.0 | | 46.9 | | Medium dense brown silty SAND (SM), mps=0.75 in., no odor, moist, 5% brick fragment, 5% concrete pieces, 5% coarse to fine gravel, lesser amounts of brick, concrete fragments<br>-FILL- | | 5 | | | 55 | 30 | | | | |
| | 3<br>5<br>8<br>9 | S4<br>13 | 8.0<br>10.0 | | 8.0 | MH | Stiff olive-gray sandy elastic SILT (MH), mps=0.5 in., no odor, moist, trace gravel<br>-FILL- | | 5 | | 5 | 20 | 70 | S | L | M | |
| 10 | 3<br>6<br>10<br>14 | S5<br>7 | 10.0<br>12.0 | | 42.9 | | Very stiff olive-gray sandy elastic SILT (MH), mps=0.5 in., no odor, moist, trace gravel, increase sand content<br>-FILL- | | 5 | | 5 | 30 | 60 | S | L | M | |
| | 13<br>40<br>43<br>61 | S6<br>12 | 12.0<br>14.0 | | 12.0<br>41.1 | ML | Very dense olive-brown sandy SILT with gravel (ML), mps=0.5 in., no odor, dry, trace wood fibers, trace brick particles<br>-FILL- | | 10 | 5 | 5 | 25 | 55 | R | L | N | |
| | | | | | 13.8 | | Note: nose of spoon contained yellow-brown well-graded SAND, trace gravel, dry | | 5 | 15 | 15 | 65 | | | | | |
| 15 | 12<br>26<br>36<br>35 | S7<br>18 | 15.0<br>17.0 | | | SW | Very dense yellow-brown well-graded SAND with gravel (SW), mps=1.0 in., no odor, dry<br>-GLACIAL STREAM DEPOSIT- | 5 | 10 | 15 | 15 | 55 | | | | | |
| 20 | | | | | | | | | | | | | | | | | |

**Water Level Data**

| Date | Time | Elapsed Time (hr.) | Depth (ft.) to: Bottom of Casing | Bottom of Hole | Water |
|---|---|---|---|---|---|
| 2/20/03 | 1405 | 0.25 | 20.0 | 21.5 | 21.0 |

**Sample Identification**

O Open End Rod
T Thin Wall Tube
U Undisturbed Sample
S Split Spoon
G Geoprobe

**Well Diagram**

Riser Pipe
Screen
Filter Sand
Cuttings
Grout
Concrete
Bentonite Seal

**Summary**

Overburden (lin. ft.) 22.0
Rock Cored (lin. ft.) -
Samples 8S

**Boring No. B107**

Field Tests: Dilatancy: R-Rapid, S-Slow, N-None
Toughness: L-Low, M-Medium, H-High
Plasticity: N-Nonplastic, L-Low, M-Medium, H-High
Dry Strength: N-None, L-Low, M-Medium, H-High, V-Very High

[1]SPT = Sampler blows per 6 in. [2]Maximum particle size (mm) is determined by direct observation within the limitations of sampler size (in millimeters).

**Note: Soil identification based on visual-manual methods of the USCS as practiced by Haley & Aldrich, Inc.**

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# TEST BORING REPORT

**Boring No.** B107
File No. 29761-001
Sheet No. 2 of 2

| Depth (ft.) | SPT[1] | Sample No. & Rec. (in.) | Sample Depth (ft.) | Well Diagram | Elev./Depth (ft.) | USCS Symbol | Visual-Manual Identification and Description (Density/consistency, color, GROUP NAME, max. particle size[2], structure, odor, moisture, optional descriptions, geologic interpretation) | Gravel % Coarse | Gravel % Fine | Sand % Coarse | Sand % Medium | Sand % Fine | % Fines | Field Test Dilatancy | Field Test Toughness | Field Test Plasticity | Field Test Strength |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| 20 | 9<br>24<br>27<br>30 | S8<br>14 | 20.0<br>22.0 | | | SW | Very dense yellow-brown well-graded SAND with gravel (SW), mps=1.25 in., no odor, moist to wet<br>-GLACIAL STREAM DEPOSIT- | 5 | 15 | 20 | 20 | 40 | | | | | |
| | | | | | 32.9<br>22.0 | | BOTTOM OF EXPLORATION 22.0 FT. | | | | | | | | | | |

[1]SPT = Sampler blows per 6 in. [2]Maximum particle size (mm) is determined by direct observation within the limitations of sampler size.

**NOTE: Soil identification based on visual-manual methods of the USCS as practiced by Haley & Aldrich, Inc.**

**Boring No.** B107

HALEY & ALDRICH

# TEST BORING REPORT

**Boring No. B108**

Project PROPOSED FOOD STORE, FOREST AND RIVERSIDE STREET, PORTLAND, ME
Client HANNAFORD BROS. CO.
Contractor MAINE TEST BORINGS, INC.

File No. 29761-001
Sheet No. 1 of 3
Start February 20, 2003
Finish February 20, 2003
Driller M. Porter
H&A Rep. D. Mancinelli
Elevation 81.4
Datum NGVD
Location See Plan

| | Casing | Sampler | Barrel | Drilling Equipment and Procedures |
|---|---|---|---|---|
| Type | HSA | SS | - | Rig Make & Model: Mobile Bombardier |
| Inside Diameter (in.) | 2.5 | 1 3/8 | - | Bit Type: Cutting Head |
| Hammer Weight (lb.) | - | 140 | - | Drill Mud: None |
| Hammer Fall (in.) | - | 30 | - | Casing: HSA |
| | | | | Hoist/Hammer: Winch /Doughnut Hammer |

| Depth (ft.) | SPT[1] | Sample No. & Rec. (in.) | Sample Depth (ft.) | Well Diagram | Elev./Depth (ft.) | USCS Symbol | Visual-Manual Identification and Description (Density/consistency, color, GROUP NAME, max. particle size[2], structure, odor, moisture, optional descriptions, geologic interpretation) | Gravel % Coarse | Gravel % Fine | Sand % Coarse | Sand % Medium | Sand % Fine | % Fines | Field Test Dilatancy | Field Test Toughness | Field Test Plasticity | Field Test Strength |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| 0 | | | | | | ML | Stiff dark brown SILT (MH), mps=.42 mm, slight organic odor, dry to moist, trace roots, fine sand | | | | | 5 | 95 | | | | |
| | 5 7 7 10 | S1 21 | 0.5 2.5 | | 79.4 2.0 | | -TOPSOIL- | | | | | | | | | | |
| | | | | | | SP | Loose yellow-brown poorly-graded SAND (SP), mps=2.0 mm, no odor, dry | | | 5 | 10 | 85 | | | | | |
| | | | | | | | -MARINE DEPOSIT- | | | | | | | | | | |
| 5 | 4 7 10 12 | S2 22 | 5.0 7.0 | | 75.9 5.5 | CL | Loose yellow-brown poorly-graded SAND (SP), mps=2.0 mm, no odor, dry | | | 5 | 10 | 85 | | | | | |
| | | | | | | | Very stiff olive-brown lean CLAY (CL), mps=0.75 mm, no odor, dry to moist, trace silt, trace root debris, PP=2.25 TSF | | | | | | 100 | N | M | M | |
| 10 | 3 2 4 4 | S3 24 | 10.0 12.0 | | | | Medium stiff gray lean CLAY (CL), mps=.075 mm, no odor, moist, laminated, PP=1.0 TSF | | | | | | 100 | N | M | M | |
| | | | | | | | -MARINE DEPOSIT- | | | | | | | | | | |
| 15 | 1 2 3 3 | S4 24 | 15.0 17.0 | | | CL | Medium stiff gray lean CLAY (CL), mps=2.0 mm, no odor, moist, occasional fine to medium sand parting<4.0 mm thick, PP=<0.5 TSF | | | | | | 100 | N | M | M | H |
| 20 | | | | | | | | | | | | | | | | | |

**Water Level Data**

| Date | Time | Elapsed Time (hr.) | Depth (ft.) to: Bottom of Casing | Bottom of Hole | Water |
|---|---|---|---|---|---|
| 2/20/03 | 1640 | 0.25 | 5.0 | 51.9 | 51.4 |

**Sample Identification**

O Open End Rod
T Thin Wall Tube
U Undisturbed Sample
S Split Spoon
G Geoprobe

**Well Diagram**

Riser Pipe
Screen
Filter Sand
Cuttings
Grout
Concrete
Bentonite Seal

**Summary**

Overburden (lin. ft.) 52.0
Rock Cored (lin. ft.) -
Samples 11S

**Boring No. B108**

Field Tests: Dilatancy: R-Rapid, S-Slow, N-None
Toughness: L-Low, M-Medium, H-High
Plasticity: N-Nonplastic, L-Low, M-Medium, H-High
Dry Strength: N-None, L-Low, M-Medium, H-High, V-Very High

[1]SPT = Sampler blows per 6 in. [2]Maximum particle size (mm) is determined by direct observation within the limitations of sampler size (in millimeters).

**Note: Soil identification based on visual-manual methods of the USCS as practiced by Haley & Aldrich, Inc.**

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# TEST BORING REPORT

**Boring No.** B108
File No. 29761-001
Sheet No. 2 of 3

| Depth (ft.) | SPT[1] | Sample No. & Rec. (in.) | Sample Depth (ft.) | Well Diagram | Elev./Depth (ft.) | USCS Symbol | Visual-Manual Identification and Description (Density/consistency, color, GROUP NAME, max. particle size[2], structure, odor, moisture, optional descriptions, geologic interpretation) | Gravel % Coarse | Gravel % Fine | Sand % Coarse | Sand % Medium | Sand % Fine | % Fines | Field Test Dilatancy | Field Test Toughness | Field Test Plasticity | Field Test Strength |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| 20 | 3<br>4<br>3<br>4 | S5<br>24 | 20.0<br>22.0 | | | | Medium stiff gray lean CLAY (CL), mps=2.0 mm, no odor, moist, PP=<0.5 TSF | | | | | | 100 | N | M | M | H |
| 25 | 3<br>5<br>3<br>4 | S6<br>24 | 25.0<br>27.0 | | | CL | Medium stiff gray lean CLAY (CL), mps=2.0 mm, no odor, moist, PP=<0.5 TSF<br>-MARINE DEPOSIT- | | | | | | 100 | N | M | M | |
| 30 | 2<br>3<br>5<br>4 | S7<br>24 | 30.0<br>32.0 | | | CL | Medium stiff gray lean CLAY (CL), mps=.075, no odor, moist, PP=0.5 TSF<br>-MARINE DEPOSIT- | | | | | | 100 | N | M | M | |
| 35 | 1<br>3<br>3<br>5 | S8<br>24 | 35.0<br>37.0 | | | | Medium stiff gray lean CLAY (CL), mps<5.0 mm, no odor, moist, frequent fine sand partings, PP=0.25 TSF<br>-MARINE DEPOSIT- | | | | | 5 | 95 | N | M | M | |
| 40 | 3<br>4<br>5<br>5 | S9<br>24 | 40.0<br>42.0 | | | CL | Stiff gray lean CLAY (CL), mps<5.0 mm, no odor, moist, fine sand pocket in top of recovery approximately 3.0 in., thick, PP=0.25 TSF<br>-MARINE DEPOSIT- | | | | | 5 | 95 | | | | |
| 45 | 3<br>5<br>6<br>6 | S10<br>24 | 45.0<br>47.0 | | | | Stiff gray lean CLAY (CL), mps<5.0 mm, no odor, moist, PP=0.25 TSF<br>-MARINE DEPOSIT- | | | | | 5 | 95 | | | | |

[1]SPT = Sampler blows per 6 in. [2]Maximum particle size (mm) is determined by direct observation within the limitations of sampler size.

NOTE: Soil identification based on visual-manual methods of the USCS as practiced by Haley & Aldrich, Inc.

HALEY & ALDRICH

# TEST BORING REPORT

**Boring No.** B108
File No. 29761-001
Sheet No. 3 of 3

| Depth (ft.) | SPT[1] | Sample No. & Rec. (in.) | Sample Depth (ft.) | Well Diagram | Elev./Depth (ft.) | USCS Symbol | Visual-Manual Identification and Description (Density/consistency, color, GROUP NAME, max. particle size[2], structure, odor, moisture, optional descriptions, geologic interpretation) | Gravel % Coarse | Gravel % Fine | Sand % Coarse | Sand % Medium | Sand % Fine | % Fines | Field Test Dilatancy | Field Test Toughness | Field Test Plasticity | Field Test Strength |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| 50 | 6<br>6<br>6<br>10 | S11<br>24 | 50.0<br>52.0 | | 29.4<br>52.0 | | Stiff gray lean CLAY (CL), mps < .5 mm, no odor, moist, frequent fine sand partings<br><br>Note: nose of spoon contained gray fine sand<br>-MARINE DEPOSIT-<br>BOTTOM OF EXPLORATION 52.0 FT. | | | | | 5 | 95 | N | M | M | |

[1]SPT = Sampler blows per 6 in. [2]Maximum particle size (mm) is determined by direct observation within the limitations of sampler size.

NOTE: Soil identification based on visual-manual methods of the USCS as practiced by Haley & Aldrich, Inc.

**Boring No.** B108

# TEST BORING REPORT

**Boring No. B109**

Project PROPOSED FOOD STORE, FOREST AND RIVERSIDE STREET, PORTLAND, ME
Client HANNAFORD BROS. CO.
Contractor MAINE TEST BORINGS, INC.

File No. 29761-001
Sheet No. 1 of 2
Start February 19, 2003
Finish February 19, 2003
Driller M. Porter
H&A Rep. D. Mancinelli
Elevation 47.1
Datum NGVD
Location See Plan

| | Casing | Sampler | Barrel | Drilling Equipment and Procedures |
|---|---|---|---|---|
| Type | HSA | SS | - | Rig Make & Model: Mobile Bombardier |
| Inside Diameter (in.) | 2.5 | 1 3/8 | - | Bit Type: Cutting Head |
| Hammer Weight (lb.) | - | 140 | - | Drill Mud: None |
| Hammer Fall (in.) | - | 30 | - | Casing: HSA |
| | | | | Hoist/Hammer: Winch /Doughnut Hammer |

| Depth (ft.) | SPT[1] | Sample No. & Rec. (in.) | Sample Depth (ft.) | Well Diagram | Elev./Depth (ft.) | USCS Symbol | Visual-Manual Identification and Description (Density/consistency, color, GROUP NAME, max. particle size[2], structure, odor, moisture, optional descriptions, geologic interpretation) | Gravel % Coarse | Gravel % Fine | Sand % Coarse | Sand % Medium | Sand % Fine | % Fines | Field Test Dilatancy | Field Test Toughness | Field Test Plasticity | Field Test Strength |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| 0 | | | | | | | Note: attempted sample at 2.0 ft. could only advance split spoon to 2.1 ft., no recovery | | | | | | | | | | |
| | 50 | S1 0 | 2.0 2.1 | | | | | | | | | | | | | | |
| | 78 57 25 23 | S2 14 | 3.0 5.0 | | | SM | Very dense brown silty SAND with gravel (SM), mps=.75in., no odor, dry, ice pockets -FILL- | 5 | 10 | 5 | 10 | 40 | 30 | | | | |
| 5 | 10 20 24 21 | S3 10 | 5.0 7.0 | | 41.1 6.0 | SM | Dense yellow-brown silty SAND with gravel (SM), mps=1.0 in., no odor, dry | 5 | 10 | 10 | 10 | 50 | 15 | | | | |
| | 45 71 101 82 | S4 13 | 7.0 9.0 | | 40.1 7.0 | SW-SM | -GLACIAL STREAM DEPOSIT- Very dense brown well-graded SAND with silt and gravel (SW-SM), mps=1.5 in., no odor, dry to moist -GLACIAL STREAM DEPOSIT- | 10 | 15 | 15 | 10 | 40 | 10 | | | | |
| 10 | 13 52 100/.3 | S5 11 | 10.0 11.3 | | 37.1 10.0 | SW | Very dense brown well-graded SAND with gravel (SW), interbedded gray-brown lean clay (CL), mps=.25 in., no odor, dry to moist -GLACIAL STREAM DEPOSIT- | 10 | 10 | 15 | 15 | 50 | | | | | |
| | | | | | | CL | | | 5 | 5 | 5 | 15 | 70 | N | L | M | |
| 15 | 18 18 20 18 | S6 9 | 15.0 17.0 | | | SW | Dense brown well-graded SAND with gravel (SW), mps=0.5 in., no odor, wet -GLACIAL STREAM DEPOSIT- | 5 | 20 | 15 | 15 | 45 | | | | | |
| 20 | | | | | | | | | | | | | | | | | |

**Water Level Data**

| Date | Time | Elapsed Time (hr.) | Depth (ft.) to: Bottom of Casing | Bottom of Hole | Water |
|---|---|---|---|---|---|
| 2/19/03 | 1240 | 0.25 | - | 15.0 | 13.1 |

**Sample Identification**

O Open End Rod
T Thin Wall Tube
U Undisturbed Sample
S Split Spoon
G Geoprobe

**Well Diagram**

Riser Pipe
Screen
Filter Sand
Cuttings
Grout
Concrete
Bentonite Seal

**Summary**

Overburden (lin. ft.) 22.0
Rock Cored (lin. ft.) -
Samples 7S

**Boring No. B109**

Field Tests: Dilatancy: R-Rapid, S-Slow, N-None
Toughness: L-Low, M-Medium, H-High
Plasticity: N-Nonplastic, L-Low, M-Medium, H-High
Dry Strength: N-None, L-Low, M-Medium, H-High, V-Very High

[1]SPT = Sampler blows per 6 in. [2]Maximum particle size (mm) is determined by direct observation within the limitations of sampler size (in millimeters).

**Note: Soil identification based on visual-manual methods of the USCS as practiced by Haley & Aldrich, Inc.**

HALEY & ALDRICH

# TEST BORING REPORT

**Boring No.** B109
File No. 29761-001
Sheet No. 2 of 2

| Depth (ft.) | SPT[1] | Sample No. & Rec. (in.) | Sample Depth (ft.) | Well Diagram | Elev./Depth (ft.) | USCS Symbol | Visual-Manual Identification and Description (Density/consistency, color, GROUP NAME, max. particle size[2], structure, odor, moisture, optional descriptions, geologic interpretation) | Gravel % Coarse | Gravel % Fine | Sand % Coarse | Sand % Medium | Sand % Fine | % Fines | Field Test Dilatancy | Field Test Toughness | Field Test Plasticity | Field Test Strength |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| 20 | 5<br>16<br>12<br>17<br>18 | S7<br>12 | 20.0<br>22.0 | | | SW | Dense brown well-graded SAND with gravel (SW), mps=0.25 in., no odor, wet<br>-GLACIAL STREAM DEPOSIT- | | 20 | 20 | 15 | 45 | | | | | |
| | | | | | 25.1<br>22.0 | | BOTTOM OF EXPLORATION 22.0 FT. | | | | | | | | | | |

[1]SPT = Sampler blows per 6 in. [2]Maximum particle size (mm) is determined by direct observation within the limitations of sampler size.

**NOTE: Soil identification based on visual-manual methods of the USCS as practiced by Haley & Aldrich, Inc.**

**Boring No.** B109

HALEY & ALDRICH

# TEST BORING REPORT

**Boring No. B110 (OW)**

Project PROPOSED FOOD STORE, FOREST AND RIVERSIDE STREET, PORTLAND, ME
Client HANNAFORD BROS. CO.
Contractor MAINE TEST BORINGS, INC.

File No. 29761-001
Sheet No. 1 of 3
Start February 25, 2003
Finish February 26, 2003
Driller M. Porter
H&A Rep. D. Mancinelli
Elevation 78.8
Datum NGVD
Location See Plan

| | Casing | Sampler | Barrel | Drilling Equipment and Procedures |
|---|---|---|---|---|
| Type | HSA | SS | - | Rig Make & Model: Mobile Bombardier |
| Inside Diameter (in.) | 4.25 | 1 3/8 | - | Bit Type: Cutting Head |
| Hammer Weight (lb.) | - | 140 | - | Drill Mud: None |
| Hammer Fall (in.) | - | 30 | - | Casing: HSA |
| | | | | Hoist/Hammer: Winch /Doughnut Hammer |

| Depth (ft.) | SPT[1] | Sample No. & Rec. (in.) | Sample Depth (ft.) | Well Diagram | Elev./Depth (ft.) | USCS Symbol | Visual-Manual Identification and Description (Density/consistency, color, GROUP NAME, max. particle size[2], structure, odor, moisture, optional descriptions, geologic interpretation) | Gravel % Coarse | Gravel % Fine | Sand % Coarse | Sand % Medium | Sand % Fine | % Fines | Field Test Dilatancy | Field Test Toughness | Field Test Plasticity | Field Test Strength |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| 0 | | | | | 78.3 | | -TOPSOIL- | | | | | | | | | | |
| | 5<br>7<br>8<br>11 | S1<br>18 | 0.5<br>2.5 | | 0.5 | ML | Stiff yellow-brown SILT (ML), mps < 5.0 mm, no odor, dry to moist<br>-MARINE DEPOSIT- | | | | | | 100 | S | L | M | |
| 5 | | | | | 73.8 | | | | | | | | | | | | |
| | 3<br>6<br>9<br>11 | S2<br>15 | 5.0<br>7.0 | | 5.0 | CL | Stiff olive-brown lean CLAY (CL), mps=075 mm, no odor, moist, laminated, occasional silt pocket<br>-MARINE DEPOSIT-<br><br>Note: auger action indicated change into gray clay at 7.5 ft. | | | | | | 100 | S | M | M | |
| 10 | 2<br>6<br>7<br>8 | S3<br>22 | 10.0<br>12.0 | | | | Stiff gray lean CLAY (CL), mps=.075 mm, no odor, moist, laminated, PP < .75 TSF<br>-MARINE DEPOSIT-<br><br>FV shear test at 15.6 ft: Su=670 psf | | | | | | 100 | | | | |
| 15 | WOH<br>5<br>5<br>5 | S4<br>20 | 15.0<br>17.0 | | | CL | Stiff gray lean CLAY (CL), mps=.075 mm, no odor, moist, laminated, PP=0.5 TSF<br>-MARINE DEPOSIT- | | | | | | 100 | N | M | M | H |
| 20 | | | | | | | | | | | | | | | | | |

**Water Level Data**

| Date | Time | Elapsed Time (hr.) | Depth (ft.) to: Bottom of Casing | Bottom of Hole | Water |
|---|---|---|---|---|---|
| 2/26/03 | 0615 | 13.0 | 15.0 | 17.0 | Dry |
| 2/26/03 | 0915 | 0.25 | 45.0 | 46.8 | 45.0 |

**Sample Identification**

O Open End Rod
T Thin Wall Tube
U Undisturbed Sample
S Split Spoon
G Geoprobe

**Well Diagram**

Riser Pipe
Screen
Filter Sand
Cuttings
Grout
Concrete
Bentonite Seal

**Summary**

Overburden (lin. ft.) 53.0
Rock Cored (lin. ft.) -
Samples S11

**Boring No. B110 (OW)**

Field Tests: Dilatancy: R-Rapid, S-Slow, N-None
Toughness: L-Low, M-Medium, H-High
Plasticity: N-Nonplastic, L-Low, M-Medium, H-High
Dry Strength: N-None, L-Low, M-Medium, H-High, V-Very High

[1]SPT = Sampler blows per 6 in. [2]Maximum particle size (mm) is determined by direct observation within the limitations of sampler size (in millimeters).

**Note: Soil identification based on visual-manual methods of the USCS as practiced by Haley & Aldrich, Inc.**

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HALEY & ALDRICH

# TEST BORING REPORT

**Boring No.** B110 (OW)
File No. 29761-001
Sheet No. 2 of 3

| Depth (ft.) | SPT[1] | Sample No. & Rec. (in.) | Sample Depth (ft.) | Well Diagram | Elev./Depth (ft.) | USCS Symbol | Visual-Manual Identification and Description (Density/consistency, color, GROUP NAME, max. particle size[2], structure, odor, moisture, optional descriptions, geologic interpretation) | Gravel % Coarse | Gravel % Fine | Sand % Coarse | Sand % Medium | Sand % Fine | % Fines | Field Test Dilatancy | Field Test Toughness | Field Test Plasticity | Field Test Strength |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| 20 | WOR<br>WOH<br>WOH<br>6 | S5<br>24 | 20.0<br>22.0 | | | CL | Very soft gray lean CLAY (CL), mps=.075 mm, no odor, moist, laminated, PP<.5 TSF<br>-MARINE DEPOSIT- | | | | | | 100 | | | | |
| | | | | | | | FV shear test at 25.6 ft: Su=260 psf | | | | | | | | | | |
| 25 | WOR<br>WOR<br>WOH<br>6 | S6<br>24 | 25.0<br>27.0 | | | CL | Very soft gray lean CLAY (CL), mps=.075 mm, no odor, moist | | | | | | 100 | N | M | M | |
| 30 | WOR<br>WOH<br>WOH<br>6 | S7<br>24 | 30.0<br>32.0 | | | CL | Very soft gray lean CLAY (CL), mps=.075 mm, no odor, moist, laminated<br>-MARINE DEPOSIT- | | | | | | 100 | N | M | M | |
| | | | | | | | FV shear test at 35.6 ft: Su=850 psf | | | | | | | | | | |
| 35 | WOR<br>WOH<br>WOH<br>2 | S8<br>24 | 35.0<br>37.0 | | | CL | Soft to medium stiff gray lean CLAY (CL), mps=.075 mm, no odor, moist, laminated, PP<.25 TSF<br>-MARINE DEPOSIT- | | | | | | 100 | N | M | M | |
| 40 | WOH<br>3<br>4<br>5 | S9<br>24 | 40.0<br>42.0 | | | CL | Medium stiff gray lean CLAY (CL), mps=.075 mm, no odor, moist, laminated<br>-MARINE DEPOSIT- | | | | | | 100 | S | M | M | |
| 45 | WOR<br>WOH<br>WOH<br>5 | S10<br>24 | 45.0<br>47.0 | | | CL | Soft to medium stiff gray lean CLAY (CL), mps<.5 mm, no odor, moist, frequent find sand parting<br>-MARINE DEPOSIT- | | | | | | 100 | | | | |

[1]SPT = Sampler blows per 6 in. [2]Maximum particle size (mm) is determined by direct observation within the limitations of sampler size.

**NOTE: Soil identification based on visual-manual methods of the USCS as practiced by Haley & Aldrich, Inc.**

HALEY & ALDRICH

# TEST BORING REPORT

**Boring No.** B110 (OW)
File No. 29761-001
Sheet No. 3 of 3

| Depth (ft.) | SPT[1] | Sample No. & Rec. (in.) | Sample Depth (ft.) | Well Diagram | Elev./Depth (ft.) | USCS Symbol | Visual-Manual Identification and Description (Density/consistency, color, GROUP NAME, max. particle size[2], structure, odor, moisture, optional descriptions, geologic interpretation) | Gravel % Coarse | Gravel % Fine | Sand % Coarse | Sand % Medium | Sand % Fine | % Fines | Field Test Dilatancy | Field Test Toughness | Field Test Plasticity | Field Test Strength |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| 50 | WOR<br>4<br>10<br>10 | S11<br>24 | 50.0<br>52.0 | | | | Stiff gray to gray-brown sandy lean CLAY (CL), mps < .5 mm, no odor, moist, frequent fine sand partings and silt laminae, occasional fine sand pockets<br>-MARINE DEPOSIT-<br>Note: advance augers to 53.0 ft. install observation well at 53.0 ft. | | | | | 30 | 70 | S | L | M | |
| | | | | | 25.8<br>53.0 | | BOTTOM OF EXPLORATION 53.0 FT. | | | | | | | | | | |

[1]SPT = Sampler blows per 6 in. [2]Maximum particle size (mm) is determined by direct observation within the limitations of sampler size.

**NOTE: Soil identification based on visual-manual methods of the USCS as practiced by Haley & Aldrich, Inc.**

# OBSERVATION WELL INSTALLATION REPORT

HALEY & ALDRICH

| | |
|---|---|
| Project | PROPOSED FOOD STORE |
| City/State | PORTLAND, MAINE |
| Client | HANNAFORD BROS. CO. |
| Contractor | MAINE TEST BORINGS, INC. |
| Driller | MIKE PORTER |

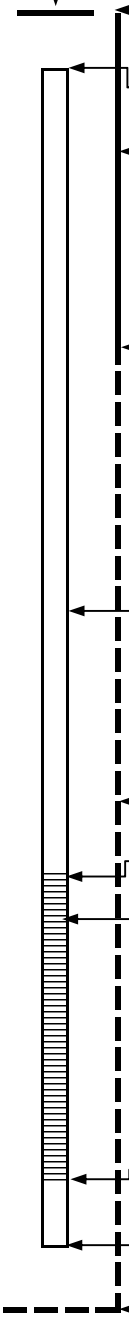
| | |
|---|---|
| Observation Well | MW110 |
| Test Boring | B-110 |
| Installation Date | 26-Feb-03 |
| Location | See Plan |
| H&A File No. | 29761-000 |
| H&A Rep. | D. Mancinelli |

Ground El. 78.8
El. Datum NGVD

SOIL/ROCK CONDITIONS | BOREHOLE BACKFILL
(Numbers refer to elevation/depth from ground surface in feet)
(not to scale)

TOPSOIL
0.5
SILT (ML) MARINE DEPOSIT
5.0
CUTTINGS
LEAN CLAY
MARINE DEPOSIT (CL)
FILTER SAND
SANDY CLAY/SILT
Bottom of Exploration

BENTONITE
2.5
FILTER SAND
8.0
BENTONITE
38.5
BENTONITE
40.5



Type of protective cover/lock: Ground Pipe Cap/Lock
Height of top of roadway box above ground surface: 3.0 ft
Height of top of riser pipe above ground surface: 2.9 ft
Type of protective casing: Covered Pipe
Length: 5.3 ft
Inside diameter: 3.0 in.
Depth of bottom of casing: 2.3 ft

Seals:

| Type | Depth to top (ft) | Thickness (ft) |
|---|---|---|
| Bentonite | 0.0 | 2.5 |
| Bentonite | 38.5 | 2.0 |
| | | |
| | | |

Type of riser pipe: Sch 40 PVC
Inside diameter of riser pipe: 2.0 in.
Type of backfill around riser: Filter Sand/Cuttings
Diameter of borehole: 4.0 in.
Depth of top of well screen: 43.0 ft
Type of point or manufacturer: Machine Slotted
Screen gauge or size of openings: 0.010 in.
Diameter of well screen: 2.0 in.
Type of backfill around screen: Filter Sand
Depth of bottom of well screen: 53.0 ft
Depth of bottom of silt trap:
Depth of bottom of borehole: 53.0 ft

(Depths refer to ground surface)

Remarks: 90 BAGS OF SAND/2 BAGS BENTONITE CHIPS

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HALEY & ALDRICH

# TEST BORING REPORT

**Boring No. B111 (OW)**

Project PROPOSED FOOD STORE, FOREST AND RIVERSIDE STREET, PORTLAND, ME
Client HANNAFORD BROS. CO.
Contractor MAINE TEST BORINGS, INC.

File No. 29761-001
Sheet No. 1 of 2
Start February 26, 2003
Finish February 26, 2003
Driller M. Porter
H&A Rep. D. Mancinelli
Elevation 43.2
Datum NGVD
Location See Plan

| | Casing | Sampler | Barrel | Drilling Equipment and Procedures |
|---|---|---|---|---|
| Type | HSA | SS | - | Rig Make & Model: Mobile Bombardier |
| Inside Diameter (in.) | 4.25 | 1 3/8 | - | Bit Type: Cutting Head |
| Hammer Weight (lb.) | - | 140 | - | Drill Mud: None |
| Hammer Fall (in.) | - | 30 | - | Casing: HSA |
| | | | | Hoist/Hammer: Winch /Doughnut Hammer |

| Depth (ft.) | SPT[1] | Sample No. & Rec. (in.) | Sample Depth (ft.) | Well Diagram | Elev./Depth (ft.) | USCS Symbol | Visual-Manual Identification and Description (Density/consistency, color, GROUP NAME, max. particle size[2], structure, odor, moisture, optional descriptions, geologic interpretation) | Gravel % Coarse | Gravel % Fine | Sand % Coarse | Sand % Medium | Sand % Fine | % Fines | Field Test Dilatancy | Field Test Toughness | Field Test Plasticity | Field Test Strength |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| 0 | | | | | | | | | | | | | | | | | |
| | 4<br>11<br>15<br>18<br>24 | S1<br>15 | 0.5<br>2.5 | | | MH | Very stiff olive-brown sandy elastic SILT (MH), mps < 20.0 mm, no odor, moist, trace clay, gravel sample appears disturbed<br>-FILL- | | | 5 | 5 | 20 | 70 | R | L | M | |
| | | | | | 40.7 | | | | | | | | | | | | |
| | 11<br>16<br>14<br>13 | S2<br>7 | 2.5<br>4.5 | | 2.5 | SC | Medium dense brown clayey SAND with gravel (SC), mps = 25.0 mm, no odor, moist, trace brick particle<br>-FILL- | 5 | 10 | 15 | 20 | 30 | 20 | | | | |
| | | | | | 38.2 | | | | | | | | | | | | |
| 5 | 1<br>1<br>7<br>32 | S3<br>20 | 5.0<br>7.0 | | 5.0 | OL/<br>OH | Medium stiff gray lean CLAY (CL), mps < .5 mm, organic odor, moist, trace fine sand, roots<br>-FORMER TOPSOIL/ORGANIC DEPOSIT- | | | | | | 100 | R | L | M | |
| | | | | | 36.2 | | | | | | | | | | | | |
| | 54<br>~~30/.2~~ | S4<br>3 | 7.0<br>~~7.7~~ | | 7.0 | SW | Very dense yellow-brown well-graded SAND with gravel (SW), mps < 37.0 mm, no odor, dry<br>-GLACIAL STREAM DEPOSIT- | 5 | 10 | 20 | 20 | 45 | | | | | |
| | 16<br>27<br>21<br>21 | S5<br>11 | 8.5<br>10.5 | | | SW | Note: cobble encountered from 7.5-7.9 ft.<br>Dense yellow-brown well-graded SAND (SW), mps < 7.0 mm, no odor, wet, trace fine gravel<br>-GLACIAL STREAM DEPOSIT- | | 10 | 25 | 25 | 40 | | | | | |
| 10 | | | | | | | | | | | | | | | | | |
| 15 | 8<br>19<br>46<br>90 | S6<br>24 | 15.0<br>17.0 | | | SW | Very dense yellow-brown well-graded SAND (SW), mps < 5.0 mm, no odor, wet, trace fine gravel<br>-GLACIAL STREAM DEPOSIT- | | 10 | 25 | 25 | 40 | | | | | |
| 20 | | | | | | | | | | | | | | | | | |

**Water Level Data**

| Date | Time | Elapsed Time (hr.) | Depth (ft.) to: Bottom of Casing | Bottom of Hole | Water |
|---|---|---|---|---|---|
| 2/27/03 | 0630 | 12.5 | - | 20.0 | 9.55 |

**Sample Identification**

O Open End Rod
T Thin Wall Tube
U Undisturbed Sample
S Split Spoon
G Geoprobe

**Well Diagram**

Riser Pipe
Screen
Filter Sand
Cuttings
Grout
Concrete
Bentonite Seal

**Summary**

Overburden (lin. ft.) 21.5
Rock Cored (lin. ft.) -
Samples 7S

**Boring No. B111 (OW)**

Field Tests: Dilatancy: R-Rapid, S-Slow, N-None
Toughness: L-Low, M-Medium, H-High
Plasticity: N-Nonplastic, L-Low, M-Medium, H-High
Dry Strength: N-None, L-Low, M-Medium, H-High, V-Very High

[1]SPT = Sampler blows per 6 in. [2]Maximum particle size (mm) is determined by direct observation within the limitations of sampler size (in millimeters).

**Note: Soil identification based on visual-manual methods of the USCS as practiced by Haley & Aldrich, Inc.**

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HALEY & ALDRICH

# TEST BORING REPORT

**Boring No.** B111 (OW)
File No. 29761-001
Sheet No. 2 of 2

| Depth (ft.) | SPT[1] | Sample No. & Rec. (in.) | Sample Depth (ft.) | Well Diagram | Elev./Depth (ft.) | USCS Symbol | Visual-Manual Identification and Description (Density/consistency, color, GROUP NAME, max. particle size[2], structure, odor, moisture, optional descriptions, geologic interpretation) | Gravel % Coarse | Gravel % Fine | Sand % Coarse | Sand % Medium | Sand % Fine | % Fines | Field Test Dilatancy | Field Test Toughness | Field Test Plasticity | Field Test Strength |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| 20 | 6<br>64<br>106 | S7<br>18 | 20.0<br>21.5 | | 21.7 | SW | Very dense yellow-brown well-graded SAND (SW), mps < 5.0 mm, no odor, wet<br>-GLACIAL STREAM DEPOSIT- | | | 15 | 15 | 70 | | | | | |
| | | | | | 21.5 | | BOTTOM OF EXPLORATION 21.5 FT.<br><br>Note: observation well installed at 20.0 ft. | | | | | | | | | | |

[1]SPT = Sampler blows per 6 in. [2]Maximum particle size (mm) is determined by direct observation within the limitations of sampler size.

**NOTE: Soil identification based on visual-manual methods of the USCS as practiced by Haley & Aldrich, Inc.**

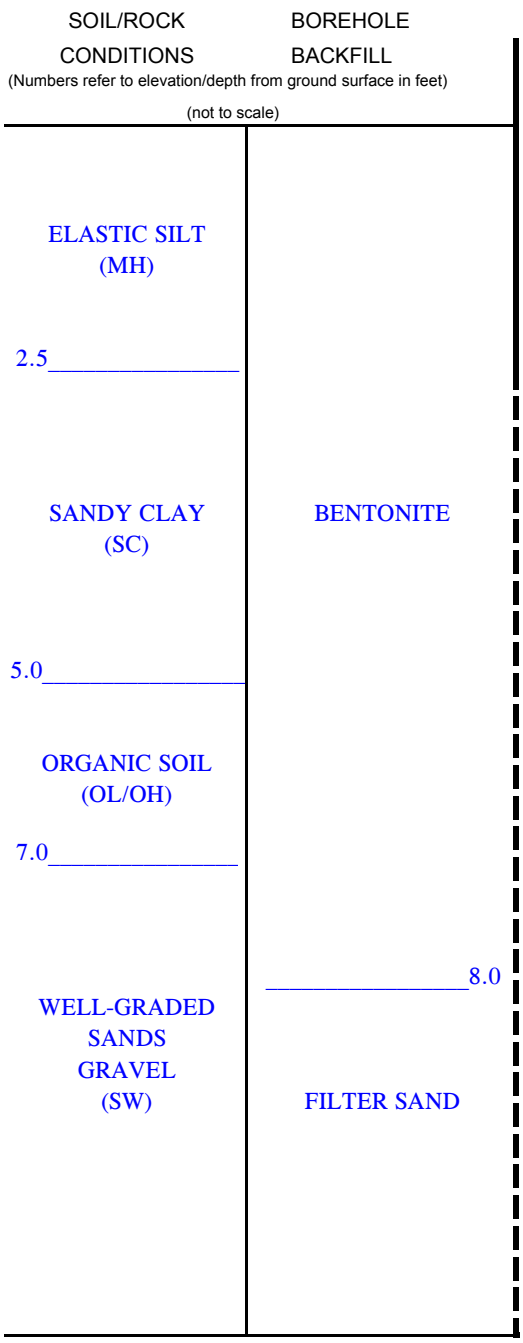
# OBSERVATION WELL INSTALLATION REPORT

HALEY & ALDRICH

| | |
|---|---|
| Project | PROPOSED FOOD STORE |
| City/State | PORTLAND, MAINE |
| Client | HANNAFORD BROS. CO. |
| Contractor | MAINE TEST BORINGS, INC. |
| Driller | MIKE PORTER |

| | |
|---|---|
| Observation Well | MW111 |
| Test Boring | B-111 |
| Installation Date | 26-Feb-03 |
| Location | See Plan |
| H&A File No. | 29761-000 |
| H&A Rep. | D. Mancinelli |

Ground El. 43.2
El. Datum NGVD




Type of protective cover/lock: Ground Pipe Cap/Lock
Height of top of roadway box above ground surface: 2.6 ft
Height of top of riser pipe above ground surface: 2.5 ft
Type of protective casing: Ground Pipe
Length: 5.3 ft
Inside diameter: 3.0 in.
Depth of bottom of casing: 2.7 ft

Seals:

| Type | Depth to top (ft) | Thickness (ft) |
|---|---|---|
| Bentonite | 0.0 | 8.0 |
| | | |
| | | |
| | | |

Type of riser pipe: Sch 40 PVC
Inside diameter of riser pipe: 2.0 in.
Type of backfill around riser: Filter Sand/Bentonite
Diameter of borehole: 6.0 in.
Depth of top of well screen: 10.0 ft
Type of point or manufacturer: Machine Slotted
Screen gauge or size of openings: 0.010 in.
Diameter of well screen: 2.0 in.
Type of backfill around screen: Filter Sand
Depth of bottom of well screen: 20.0 ft
Depth of bottom of silt trap:
Depth of bottom of borehole: 21.5 ft

(Depths refer to ground surface)

Remarks:

G:/PROJECTS/29761/000/OWL/OWB111

# TEST BORING REPORT

**Boring No. B112**

Project PROPOSED FOOD STORE, FOREST AND RIVERSIDE STREET, PORTLAND, ME
Client HANNAFORD BROS. CO.
Contractor MAINE TEST BORINGS, INC.

File No. 29761-001
Sheet No. 1 of 2
Start February 19, 2003
Finish February 19, 2003
Driller M. Porter
H&A Rep. D. Mancinelli
Elevation 61.7
Datum NGVD
Location See Plan

| | Casing | Sampler | Barrel | Drilling Equipment and Procedures |
|---|---|---|---|---|
| Type | HSA | SS | - | Rig Make & Model: Mobile Bombardier |
| Inside Diameter (in.) | 2.5 | 1 3/8 | - | Bit Type: Cutting Head |
| Hammer Weight (lb.) | - | 140 | - | Drill Mud: None |
| Hammer Fall (in.) | - | 30 | - | Casing: HSA |
| | | | | Hoist/Hammer: Winch /Doughnut Hammer |

| Depth (ft.) | SPT[1] | Sample No. & Rec. (in.) | Sample Depth (ft.) | Well Diagram | Elev./Depth (ft.) | USCS Symbol | Visual-Manual Identification and Description (Density/consistency, color, GROUP NAME, max. particle size[2], structure, odor, moisture, optional descriptions, geologic interpretation) | Gravel % Coarse | Gravel % Fine | Sand % Coarse | Sand % Medium | Sand % Fine | % Fines | Field Test Dilatancy | Field Test Toughness | Field Test Plasticity | Field Test Strength |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| 0 | | | | | | | Note: advanced augers to 2.5 ft. thru frost before sample can be attempted | | | | | | | | | | |
| | | | | | 59.2 | | | | | | | | | | | | |
| | | | | | 2.5 | | | | | | | | | | | | |
| | 3<br>3<br>6<br>6 | S1<br>15 | 3.0<br>5.0 | | | CL | Stiff gray lean CLAY (CL), mps=2.0 mm, weakly stratified, slight organic odor, moist, sample appears disturbed<br>-FILL- | | | | | | 100 | N | L | M | |
| 5 | WOR<br>13<br>33 | S2<br>6 | 5.0<br>6.5 | | | | Stiff gray-brown lean CLAY (CL), mps=1.0 in., weakly stratified, slight organic odor, moist, trace sand gravel, sample appears disturbed<br>-FILL- | 5 | 5 | 5 | 5 | 5 | 75 | N | L | M | |
| | | | | | 55.2 | | | | | | | | | | | | |
| | 66 | S2R | 6.5 | | 6.5 | SP | Very dense brown gray poorly-graded SAND with gravel (SP), mps=1.5 in., no odor, dry, trace clay<br>-FILL- | 5 | 5 | 15 | 20 | 40 | 5 | | | | |
| | 27<br>23<br>25<br>41 | 2<br>S3<br>3 | 7.0<br>7.0<br>9.0 | | | | Dense brown poorly-graded SAND with gravel (SP), mps=1.5 in., no odor, dry<br>-FILL- | 5 | 20 | 15 | 15 | 45 | | | | | |
| | 10<br>22<br>9<br>8 | S4<br>6 | 9.0<br>11.0 | | | | Dense gray-brown poorly-graded SAND with gravel (SP), mps=1.25 in., no odor, dry | 5 | 15 | 10 | 15 | 50 | 5 | | | | |
| 10 | | | | | | | Note: tip of spoon contained sandy silt | | | | | | | | | | |
| | 14<br>9<br>10<br>11 | S5<br>9 | 11.0<br>13.0 | | | SP | -FILL-<br>Medium dense brown poorly-graded SAND with gravel (SP), mps=1.5 in., no odor, dry | 5 | 10 | 20 | 20 | 45 | | | | | |
| | | | | | 48.7 | | -FILL- | | | | | | | | | | |
| | 5<br>49<br>35<br>23 | S6<br>7 | 13.0<br>15.0 | | 13.0 | SC | Very dense gray-brown clayey SAND with gravel (SC), mps=1.0 in., very slight organic odor in clay, moist, root fiber present in clay, sample appears disturbed<br>-FILL- | 5 | 10 | 15 | 20 | 25 | 25 | | | | |
| 15 | 40<br>58<br>51<br>77 | S7<br>11 | 15.0<br>17.0 | | | SP-SC | Very dense dark brown poorly-graded SAND with clay and gravel (SP-SC), mps=1.5 in.,slight burnt odor in ash layer, moist, 20% ash<br>-FILL- | 10 | 10 | 15 | 15 | 20 | 10 | | | | |
| | 45<br>48<br>25<br>41 | S8<br>8 | 17.0<br>19.0 | | | SC | Very dense brown to gray-brown clayey SAND (SC), mps=1.25 in., no odor, moist, 25% brick, 20% wood pieces ash<br>-FILL- | 5 | 5 | 5 | 5 | 15 | 20 | | | | |
| | | | | | 43.2 | | | | 5 | 10 | 10 | 55 | 20 | | | | |
| | | | | | 18.5 | SM | Dense gray-brown silty SAND (SM), mps=.25 in., no odor, moist, thin | | | | | | | | | | |
| | 4<br>8 | S9<br>17 | 19.0<br>21.0 | | 42.7<br>19.0 | MH | silt pockets, trace fine gravel<br>Stiff olive-brown sandy elastic SILT (MH), mps=5.0 mm, no odor, | | | 5 | 10 | 20 | 65 | N | L | M | |
| 20 | | | | | | | | | | | | | | | | | |

**Water Level Data**

| Date | Time | Elapsed Time (hr.) | Depth (ft.) to: Bottom of Casing | Bottom of Hole | Water |
|---|---|---|---|---|---|
| 2/19/03 | 1015 | 0.5 | HSA | 9.7 | Dry |

**Sample Identification**

O Open End Rod
T Thin Wall Tube
U Undisturbed Sample
S Split Spoon
G Geoprobe

**Well Diagram**

Riser Pipe
Screen
Filter Sand
Cuttings
Grout
Concrete
Bentonite Seal

**Summary**

Overburden (lin. ft.) 31.0
Rock Cored (lin. ft.) -
Samples 14S

**Boring No. B112**

Field Tests: Dilatancy: R-Rapid, S-Slow, N-None
Toughness: L-Low, M-Medium, H-High
Plasticity: N-Nonplastic, L-Low, M-Medium, H-High
Dry Strength: N-None, L-Low, M-Medium, H-High, V-Very High

[1]SPT = Sampler blows per 6 in. [2]Maximum particle size (mm) is determined by direct observation within the limitations of sampler size (in millimeters).

**Note: Soil identification based on visual-manual methods of the USCS as practiced by Haley & Aldrich, Inc.**

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HALEY & ALDRICH

# TEST BORING REPORT

**Boring No.** B112
File No. 29761-001
Sheet No. 2 of 2

| Depth (ft.) | SPT[1] | Sample No. & Rec. (in.) | Sample Depth (ft.) | Well Diagram | Elev./Depth (ft.) | USCS Symbol | Visual-Manual Identification and Description (Density/consistency, color, GROUP NAME, max. particle size[2], structure, odor, moisture, optional descriptions, geologic interpretation) | Gravel % Coarse | Gravel % Fine | Sand % Coarse | Sand % Medium | Sand % Fine | % Fines | Field Test Dilatancy | Field Test Toughness | Field Test Plasticity | Field Test Strength |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| 20 | 7<br>9 | | | | | | moist, trace fine gravel, trace wood fiber | | | | | | | | | | |
| | 3<br>4<br>10<br>12 | S10<br>16 | 21.0<br>23.0 | | | | Stiff olive-brown sandy elastic SILT (MH), mps < 5.0 mm, no odor, moist, trace wood fiber, trace fine gravel, weakly stratified<br>-FILL- | | | 5 | 10 | 25 | 60 | S | L | M | |
| | 6<br>8<br>9<br>11 | S11<br>14 | 23.0<br>25.0 | | | | Very stiff olive-brown elastic SILT with sand (MH), mps = .25 in., no odor, moist, trace clay, roots, fine gravel | | | 5 | 5 | 15 | 75 | S | L | M | |
| 25 | 3<br>14<br>7<br>5 | S12<br>9 | 25.0<br>27.0 | | 36.7<br>25.0 | SW | Medium dense olive-brown well-graded SAND (SW), mps = .25 in., no odor, moist, trace fine gravel, silt<br>-GLACIAL STREAM DEPOSIT- | | 10 | 10 | 15 | 60 | 5 | | | | |
| | 25<br>46<br>40<br>30 | S13<br>2 | 27.0<br>29.0 | | | | Very dense yellow-brown well-graded SAND with gravel (SW), mps = 0.75 in., no odor, moist | 5 | 10 | 15 | 15 | 50 | 5 | | | | |
| 30 | 21<br>45<br>36<br>31 | S14<br>3 | 29.0<br>31.0 | | 30.7<br>31.0 | SW | Very dense yellow-brown well-graded SAND with gravel (SW), mps = 1.5 in., no odor, moist<br>-GLACIAL STREAM DEPOSIT-<br>BOTTOM OF EXPLORATION 31.0 FT. | 10 | 10 | 20 | 20 | 35 | 5 | | | | |

[1]SPT = Sampler blows per 6 in. [2]Maximum particle size (mm) is determined by direct observation within the limitations of sampler size.

**NOTE: Soil identification based on visual-manual methods of the USCS as practiced by Haley & Aldrich, Inc.**

**Boring No.** B112

HALEY & ALDRICH

# TEST BORING REPORT

**Boring No. B113**

Project PROPOSED FOOD STORE, FOREST AND RIVERSIDE STREET, PORTLAND, ME
Client HANNAFORD BROS. CO.
Contractor MAINE TEST BORINGS, INC.

File No. 29761-001
Sheet No. 1 of 2
Start February 18, 2003
Finish February 18, 2003
Driller M. Porter
H&A Rep. B. Lawrence
Elevation 63.6
Datum NGVD
Location See Plan

| | Casing | Sampler | Barrel | Drilling Equipment and Procedures |
|---|---|---|---|---|
| Type | HSA | SS | - | Rig Make & Model: Mobile Bombardier |
| Inside Diameter (in.) | 2.5 | 1 3/8 | - | Bit Type: Cutting Head |
| Hammer Weight (lb.) | - | 140 | - | Drill Mud: None |
| Hammer Fall (in.) | - | 30 | - | Casing: HSA |
| | | | | Hoist/Hammer: Winch /Doughnut Hammer |

| Depth (ft.) | SPT[1] | Sample No. & Rec. (in.) | Sample Depth (ft.) | Well Diagram | Elev./Depth (ft.) | USCS Symbol | Visual-Manual Identification and Description (Density/consistency, color, GROUP NAME, max. particle size[2], structure, odor, moisture, optional descriptions, geologic interpretation) | Gravel % Coarse | Gravel % Fine | Sand % Coarse | Sand % Medium | Sand % Fine | % Fines | Field Test Dilatancy | Field Test Toughness | Field Test Plasticity | Field Test Strength |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| 0 | | | | | | | Frost-grab sample of auger spoils<br>-FILL- | | | | | | | | | | |
| | 80/.2 | S1<br>2 | 2.0<br>2.2 | | | SM | Brown silty SAND (SM), mps=3 mm, frozen, trace brick | | | 10 | 15 | 60 | 15 | | | | |
| | 49<br>20<br>9<br>7 | S2<br>12 | 3.0<br>5.0 | | | | Medium dense brown silty SAND (SM), 15% brick, mps=1 in. (brick), frost to 3.5 ft. | | 5 | 10 | 10 | 35 | 25 | | | | |
| 5 | | | | | 58.6 | | | | | | | | | | | | |
| | 3<br>10<br>11<br>12 | S3<br>8 | 5.0<br>7.0 | | 5.0 | | Mix of gray SILT, brown silty SAND and wood pieces (1 in. x 2 in. )<br>-FILL- | | | | | | | | | | |
| | 7<br>13<br>7<br>6 | S4<br>6 | 7.0<br>9.0 | | | SM | Medium dense brown silty SAND (SM), mps=1 in., 5% brick, wet | | 15 | 15 | 25 | 15 | 25 | | | | |
| | | | | | 54.6 | | | | | | | | | | | | |
| | 2<br>3<br>4<br>6 | S5<br>12 | 9.0<br>11.0 | | 9.0 | CL | Medium stiff gray lean CLAY (CL), wet, pine needles at top, more sand with depth | | | | | 5 | 95 | | | | |
| 10 | | | | | 52.8 | | | | | | | | | | | | |
| | | | | | 10.8 | SP | Medium dense light brown poorly-graded SAND (SP), mps=0.4 mm, moist<br>-FILL- | | | | | 95 | 5 | | | | |
| | | | | | 49.1 | | | | | | | | | | | | |
| | | | | | 14.5 | | | | | | | | | | | | |
| 15 | 6<br>15<br>21<br>30 | S6<br>12 | 15.0<br>17.0 | | | SW | Dense light brown well-graded SAND (SW), mps=1 in., dry<br>-GLACIAL STREAM DEPOSIT- | | 5 | 15 | 50 | 25 | 5 | | | | |
| 20 | | | | | | | | | | | | | | | | | |

**Water Level Data**

| Date | Time | Elapsed Time (hr.) | Depth (ft.) to: Bottom of Casing | Bottom of Hole | Water |
|---|---|---|---|---|---|
| 2/18/03 | 0215 | 0.0 | - | 13.0 | Dry |

**Sample Identification**

O Open End Rod
T Thin Wall Tube
U Undisturbed Sample
S Split Spoon
G Geoprobe

**Well Diagram**

Riser Pipe
Screen
Filter Sand
Cuttings
Grout
Concrete
Bentonite Seal

**Summary**

Overburden (lin. ft.) 25.7
Rock Cored (lin. ft.) -
Samples 8S

**Boring No. B113**

Field Tests: Dilatancy: R-Rapid, S-Slow, N-None
Toughness: L-Low, M-Medium, H-High
Plasticity: N-Nonplastic, L-Low, M-Medium, H-High
Dry Strength: N-None, L-Low, M-Medium, H-High, V-Very High

[1]SPT = Sampler blows per 6 in. [2]Maximum particle size (mm) is determined by direct observation within the limitations of sampler size (in millimeters).

**Note: Soil identification based on visual-manual methods of the USCS as practiced by Haley & Aldrich, Inc.**

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# TEST BORING REPORT

**Boring No.** B113
File No. 29761-001
Sheet No. 2 of 2

| Depth (ft.) | SPT[1] | Sample No. & Rec. (in.) | Sample Depth (ft.) | Well Diagram | Elev./Depth (ft.) | USCS Symbol | Visual-Manual Identification and Description (Density/consistency, color, GROUP NAME, max. particle size[2], structure, odor, moisture, optional descriptions, geologic interpretation) | Gravel % Coarse | Gravel % Fine | Sand % Coarse | Sand % Medium | Sand % Fine | % Fines | Field Test Dilatancy | Field Test Toughness | Field Test Plasticity | Field Test Strength |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| 20 | 27<br>51<br>50<br>66 | S7<br>16 | 20.0<br>22.0 | | | GW | Very dense light brown well-graded GRAVEL (GW), mps=1 in., dry, occasional dark streaks | 25 | 35 | 70 | 15 | 10 | 5 | | | | |
| | | | | | | | -GLACIAL STREAM DEPOSIT- | | | | | | | | | | |
| 25 | 20<br>~~50/.2~~ | S8<br>~~6~~ | 25.0<br>~~25.7~~ | | 37.9<br>25.7 | SW | Very dense light brown well-graded SAND with gravel (SW), mps=1 in., dry | 20 | 20 | 10 | 30 | 20 | | | | | |
| | | | | | | | BOTTOM OF EXPLORATION 25.7 FT. | | | | | | | | | | |

[1]SPT = Sampler blows per 6 in. [2]Maximum particle size (mm) is determined by direct observation within the limitations of sampler size.

**NOTE: Soil identification based on visual-manual methods of the USCS as practiced by Haley & Aldrich, Inc.**

HALEY & ALDRICH

# TEST BORING REPORT

**Boring No. B114**

Project PROPOSED FOOD STORE, FOREST AND RIVERSIDE STREET, PORTLAND, ME
Client HANNAFORD BROS. CO.
Contractor MAINE TEST BORINGS, INC.

File No. 29761-001
Sheet No. 1 of 1
Start February 18, 2003
Finish February 18, 2003
Driller M. Porter
H&A Rep. D. Mancinelli
Elevation 64.2
Datum NGVD
Location See Plan

| | Casing | Sampler | Barrel | Drilling Equipment and Procedures |
|---|---|---|---|---|
| Type | HSA | SS | - | Rig Make & Model: Mobile Bombardier |
| Inside Diameter (in.) | 2.5 | 1 3/8 | - | Bit Type: Cutting Head |
| Hammer Weight (lb.) | - | 140 | - | Drill Mud: None |
| Hammer Fall (in.) | - | 30 | - | Casing: HSA |
| | | | | Hoist/Hammer: Winch /Doughnut Hammer |

| Depth (ft.) | SPT[1] | Sample No. & Rec. (in.) | Sample Depth (ft.) | Well Diagram | Elev./Depth (ft.) | USCS Symbol | Visual-Manual Identification and Description (Density/consistency, color, GROUP NAME, max. particle size[2], structure, odor, moisture, optional descriptions, geologic interpretation) | Gravel % Coarse | Gravel % Fine | Sand % Coarse | Sand % Medium | Sand % Fine | % Fines | Field Test Dilatancy | Field Test Toughness | Field Test Plasticity | Field Test Strength |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| 0 | | | | | | | Note: unable to sample until 5.0 ft. depth due to frost. Auger spoils contain gravel, sand<br>-FILL- | | | | | | | | | | |
| 5 | 76<br>16<br>18<br>11 | S1<br>6 | 5.0<br>7.0 | | | SM | Dense gray-brown silty SAND with gravel (SM), mps=1.25 in., no odor, dry<br>-FILL- | 5 | 15 | 15 | 25 | 25 | 15 | | | | |
| | 9<br>8<br>7<br>8 | S2<br>4 | 7.0<br>9.0 | | 55.7 | | Medium dense brown silty SAND with gravel (SM), mps=1.0 in., no odor, dry<br>-FILL- | 5 | 10 | 15 | 20 | 30 | 20 | | | | |
| | | | | | 8.5 | | Note: auger action indicates possible strata change at 8.5 ft.<br>Note: lost plug from auger had to advance boring to 10.5 ft. for next sample | | | | | | | | | | |
| 10 | 17<br>30<br>29 | S3<br>4 | 10.5<br>12.0 | | 52.2 | MH | Hard gray-brown sandy elastic SILT (MH), mps=0.5 in., no odor, moist, trace gravel, roots, sample appears disturbed<br>-FILL- | 5 | 5 | 5 | 5 | 10 | 70 | S | L | L | |
| | 4<br>9<br>7<br>7 | S4<br>2 | 12.0<br>14.0 | | 12.0 | SP | Medium dense brown poorly-graded SAND with gravel (SP), mps=1.25 in., no odor, moist, trace silt<br>-FILL- | 5 | 10 | 20 | 20 | 40 | 5 | | | | |
| | 6<br>11<br>12<br>14 | S5<br>18 | 14.0<br>16.0 | | 49.7<br>14.5<br>48.2 | CL | Very stiff gray-brown lean CLAY (CL), mps=4.75 mm, no odor, moist, top of recovery appears disturbed, weakly stratified, wood fibers, trace sands<br>-FILL- | | | | 5 | 5 | 90 | N | M | L | |
| 15 | | | | | 16.0 | | BOTTOM OF EXPLORATION 16.0 FT. | | | | | | | | | | |

**Water Level Data**

| Date | Time | Elapsed Time (hr.) | Depth (ft.) to: Bottom of Casing | Bottom of Hole | Water |
|---|---|---|---|---|---|
| 2/18/03 | 1630 | 0.5 | - | 12.7 | Dry |

**Sample Identification**

O Open End Rod
T Thin Wall Tube
U Undisturbed Sample
S Split Spoon
G Geoprobe

**Well Diagram**

Riser Pipe
Screen
Filter Sand
Cuttings
Grout
Concrete
Bentonite Seal

**Summary**

Overburden (lin. ft.) 16.0
Rock Cored (lin. ft.) -
Samples 5S

**Boring No. B114**

Field Tests: Dilatancy: R-Rapid, S-Slow, N-None
Toughness: L-Low, M-Medium, H-High
Plasticity: N-Nonplastic, L-Low, M-Medium, H-High
Dry Strength: N-None, L-Low, M-Medium, H-High, V-Very High

[1]SPT = Sampler blows per 6 in. [2]Maximum particle size (mm) is determined by direct observation within the limitations of sampler size (in millimeters).

**Note: Soil identification based on visual-manual methods of the USCS as practiced by Haley & Aldrich, Inc.**

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HALEY & ALDRICH

# TEST BORING REPORT

**Boring No. B115**

Project PROPOSED FOOD STORE, FOREST AND RIVERSIDE STREET, PORTLAND, ME
Client HANNAFORD BROS. CO.
Contractor MAINE TEST BORINGS, INC.

File No. 29761-001
Sheet No. 1 of 1
Start February 27, 2003
Finish February 27, 2003
Driller M. Porter
H&A Rep. D. Mancinelli
Elevation 83.9
Datum NGVD
Location See Plan

| | Casing | Sampler | Barrel | Drilling Equipment and Procedures |
|---|---|---|---|---|
| Type | SSA | SS | - | Rig Make & Model: Mobile Bombardier |
| Inside Diameter (in.) | - | 1 3/8 | - | Bit Type: Cutting Head |
| Hammer Weight (lb.) | - | 140 | - | Drill Mud: None |
| Hammer Fall (in.) | - | 30 | - | Casing: - |
| | | | | Hoist/Hammer: Winch /Doughnut Hammer |

| Depth (ft.) | SPT[1] | Sample No. & Rec. (in.) | Sample Depth (ft.) | Well Diagram | Elev./Depth (ft.) | USCS Symbol | Visual-Manual Identification and Description (Density/consistency, color, GROUP NAME, max. particle size[2], structure, odor, moisture, optional descriptions, geologic interpretation) | Gravel % Coarse | Gravel % Fine | Sand % Coarse | Sand % Medium | Sand % Fine | % Fines | Field Test Dilatancy | Field Test Toughness | Field Test Plasticity | Field Test Strength |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| 0 | 2<br>2<br>7<br>15 | S1<br>20 | 0.0<br>2.0 | | 82.9 | ML | Soft dark brown SILT (ML), mps=.075 mm, organic odor, moist, leaf debris, roots 25% | | | | | | 75 | | | | |
| | | | | | 1.0 | SP | -TOPSOIL- | | | | 10 | 85 | 5 | | | | |
| | | | | | | | Medium dense red-brown grading to a yellow-brown poorly-graded SAND (SP), mps=2.0 mm, no odor, dry, trace silt<br>-MARINE DEPOSIT- | | | | | | | | | | |
| | | | | | 80.4 | | | | | | | | | | | | |
| | | | | | 3.5 | | Note: auger spoils indicate probable strata change at 3.5 ft. | | | | | | | | | | |
| 5 | 7<br>14<br>19<br>26 | S2<br>24 | 5.0<br>7.0 | | | CL | Hard olive-brown lean CLAY (CL), mps<.5 mm, no odor, moist, laminated, frequent fine sand partings<br>-MARINE DEPOSIT- | | | | | 5 | 95 | | | | |
| 10 | 8<br>10<br>12<br>14 | S3<br>24 | 10.0<br>12.0 | | | CL | Very stiff olive-brown lean CLAY (CL), mps<.5 mm, no odor, moist, laminated, frequent fine sand partings, PP=2.25 TSF<br>-MARINE DEPOSIT- | | | | | | 100 | N | M | M | |
| | | | | | 71.9 | | | | | | | | | | | | |
| | | | | | 12.0 | | BOTTOM OF EXPLORATION 12.0 FT. | | | | | | | | | | |

| Water Level Data | | | | | |
|---|---|---|---|---|---|
| Date | Time | Elapsed Time (hr.) | Depth (ft.) to: Bottom of Casing | Bottom of Hole | Water |
| 2/27/03 | 0900 | 0.25 | - | 12.0 | Dry |

**Sample Identification**
O Open End Rod
T Thin Wall Tube
U Undisturbed Sample
S Split Spoon
G Geoprobe

**Well Diagram**
Riser Pipe
Screen
Filter Sand
Cuttings
Grout
Concrete
Bentonite Seal

**Summary**
Overburden (lin. ft.) 12.0
Rock Cored (lin. ft.) -
Samples 3S

**Boring No. B115**

Field Tests: Dilatancy: R-Rapid, S-Slow, N-None
Toughness: L-Low, M-Medium, H-High
Plasticity: N-Nonplastic, L-Low, M-Medium, H-High
Dry Strength: N-None, L-Low, M-Medium, H-High, V-Very High

[1]SPT = Sampler blows per 6 in. [2]Maximum particle size (mm) is determined by direct observation within the limitations of sampler size (in millimeters).

**Note: Soil identification based on visual-manual methods of the USCS as practiced by Haley & Aldrich, Inc.**

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HALEY & ALDRICH

# TEST BORING REPORT

**Boring No. B116**

Project PROPOSED FOOD STORE, FOREST AND RIVERSIDE STREET, PORTLAND, ME
Client HANNAFORD BROS. CO.
Contractor MAINE TEST BORINGS, INC.

File No. 29761-001
Sheet No. 1 of 1
Start February 27, 2003
Finish February 27, 2003
Driller M. Porter
H&A Rep. D. Mancinelli
Elevation 77.7
Datum NGVD
Location See Plan

| | Casing | Sampler | Barrel | Drilling Equipment and Procedures |
|---|---|---|---|---|
| Type | SSA | SS | - | Rig Make & Model: Mobile Bombardier |
| Inside Diameter (in.) | - | 1 3/8 | - | Bit Type: Cutting Head |
| Hammer Weight (lb.) | - | 140 | - | Drill Mud: None |
| Hammer Fall (in.) | - | 30 | - | Casing: - |
| | | | | Hoist/Hammer: Winch /Doughnut Hammer |

| Depth (ft.) | SPT[1] | Sample No. & Rec. (in.) | Sample Depth (ft.) | Well Diagram | Elev./Depth (ft.) | USCS Symbol | Visual-Manual Identification and Description (Density/consistency, color, GROUP NAME, max. particle size[2], structure, odor, moisture, optional descriptions, geologic interpretation) | Gravel % Coarse | Gravel % Fine | Sand % Coarse | Sand % Medium | Sand % Fine | % Fines | Field Test Dilatancy | Field Test Toughness | Field Test Plasticity | Field Test Strength |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| 0 | | | | | | ML | Soft dark brown SILT (ML), mps < .5 mm, slight organic odor, moist, trace fine sand, roots | | | | | | 100 | | | | |
| | 3<br>9<br>18<br>27 | S1<br>17 | 0.5<br>2.5 | | 76.7<br>1.0 | ML | -TOPSOIL-<br>Very stiff yellow-brown SILT with sand (ML), mps < .5 mm, very slight organic odor, moist, trace fine sand | | | | | 35 | 65 | | | | |
| | | | | | 74.7<br>3.0 | | | | | | | | | | | | |
| 5 | 22<br>28<br>30<br>42 | S2<br>24 | 5.0<br>7.0 | | | CL | Hard yellow brown lean CLAY (CL), mps = .075 mm, no odor, moist, laminated<br>-MARINE DEPOSIT- | | | | | | 100 | N | M | M | |
| 10 | 7<br>10<br>10<br>14 | S3<br>24 | 10.0<br>12.0 | | | | Very stiff yellow-brown lean CLAY (CL), mps = .075 mm, no odor, moist, laminated<br>-MARINE DEPOSIT- | | | | | | 100 | N | M | M | |
| | | | | | 65.7<br>12.0 | | BOTTOM OF EXPLORATION 12.0 FT. | | | | | | | | | | |

| Water Level Data | | | | | |
|---|---|---|---|---|---|
| Date | Time | Elapsed Time (hr.) | Depth (ft.) to: Bottom of Casing | Bottom of Hole | Water |
| 2/27/03 | 0815 | 0.25 | - | 11.5 | 9.5 |

| Sample Identification | |
|---|---|
| O | Open End Rod |
| T | Thin Wall Tube |
| U | Undisturbed Sample |
| S | Split Spoon |
| G | Geoprobe |

Well Diagram: Riser Pipe, Screen, Filter Sand, Cuttings, Grout, Concrete, Bentonite Seal

| Summary | |
|---|---|
| Overburden (lin. ft.) | 12.0 |
| Rock Cored (lin. ft.) | - |
| Samples | 3S |

**Boring No. B116**

Field Tests: Dilatancy: R-Rapid, S-Slow, N-None
Toughness: L-Low, M-Medium, H-High
Plasticity: N-Nonplastic, L-Low, M-Medium, H-High
Dry Strength: N-None, L-Low, M-Medium, H-High, V-Very High

[1]SPT = Sampler blows per 6 in. [2]Maximum particle size (mm) is determined by direct observation within the limitations of sampler size (in millimeters).

**Note: Soil identification based on visual-manual methods of the USCS as practiced by Haley & Aldrich, Inc.**

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HALEY & ALDRICH

# TEST BORING REPORT

**Boring No. B117**

Project PROPOSED FOOD STORE, FOREST AND RIVERSIDE STREET, PORTLAND, ME
Client HANNAFORD BROS. CO.
Contractor MAINE TEST BORINGS, INC.

File No. 29761-001
Sheet No. 1 of 2
Start March 4, 2003
Finish March 4, 2003
Driller M. Coffin
H&A Rep. D. Dearden
Elevation 46.0
Datum NGVD
Location See Plan

| | Casing | Sampler | Barrel | Drilling Equipment and Procedures |
|---|---|---|---|---|
| Type | HSA | SS | - | Rig Make & Model: Track |
| Inside Diameter (in.) | 4.0 | 1 3/8 | - | Bit Type: Cutting Head |
| Hammer Weight (lb.) | - | 140 | - | Drill Mud: None |
| Hammer Fall (in.) | - | 30 | - | Casing: |
| | | | | Hoist/Hammer: Winch /Doughnut Hammer |

| Depth (ft.) | SPT[1] | Sample No. & Rec. (in.) | Sample Depth (ft.) | Well Diagram | Elev./Depth (ft.) | USCS Symbol | Visual-Manual Identification and Description (Density/consistency, color, GROUP NAME, max. particle size[2], structure, odor, moisture, optional descriptions, geologic interpretation) | Gravel % Coarse | Gravel % Fine | Sand % Coarse | Sand % Medium | Sand % Fine | % Fines | Field Test Dilatancy | Field Test Toughness | Field Test Plasticity | Field Test Strength |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| 0 | | | | NO WELL INSTALLED | | | | | | | | | | | | | |
| | 11 20 11 13 | S1 14 | 1.0 3.0 | | | GP | Grayish-brown dense poorly-graded GRAVEL with sand, and pieces of bituminous concrete -FILL- | | 60 | 10 | 20 | 10 | 0 | | | | |
| | | | | | 43.5 2.5 | SP | Bituminous concrete Brown poorly-graded SAND | | | | 30 | 70 | | | | | |
| | 8 9 11 12 | S2 16 | 3.0 5.0 | | | | | | | | | | | | | | |
| 5 | 11 9 9 10 | S3 12 | 5.0 7.0 | | | SW | Brown to rusty brown medium dense well-graded SAND | | 10 | 15 | 40 | 35 | | | | | |
| | | | | | | SP | Brown to light brown medium dense poorly-graded SAND | | | | 10 | 85 | 5 | | | | |
| 10 | 5 5 6 7 | S4 17 | 10.0 12.0 | | | SP | Brown medium dense poorly-graded SAND | | | | 35 | 60 | 5 | | | | |
| | | | | | | | (4.5 ft. of running sands inside bottom of augers) | | | | | | | | | | |
| 15 | 2 3 6 12 | S5 20 | 15.0 17.0 | | | SP | Brown loose to medium dense poorly-graded SAND Augered into running sands to 20.0 ft. | | | | 10 | 85 | 5 | | | | |
| 20 | | | | | 26.0 | | | | | | | | | | | | |

**Water Level Data**

| Date | Time | Elapsed Time (hr.) | Depth (ft.) to: Bottom of Casing | Bottom of Hole | Water |
|---|---|---|---|---|---|
| | | | | | |

**Sample Identification**

O Open End Rod
T Thin Wall Tube
U Undisturbed Sample
S Split Spoon
G Geoprobe

**Well Diagram**

Riser Pipe
Screen
Filter Sand
Cuttings
Grout
Concrete
Bentonite Seal

**Summary**

Overburden (lin. ft.) 20.0
Rock Cored (lin. ft.) -
Samples 5S

**Boring No. B117**

Field Tests: Dilatancy: R-Rapid, S-Slow, N-None
Toughness: L-Low, M-Medium, H-High
Plasticity: N-Nonplastic, L-Low, M-Medium, H-High
Dry Strength: N-None, L-Low, M-Medium, H-High, V-Very High

[1]SPT = Sampler blows per 6 in. [2]Maximum particle size (mm) is determined by direct observation within the limitations of sampler size (in millimeters).

**Note: Soil identification based on visual-manual methods of the USCS as practiced by Haley & Aldrich, Inc.**

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# TEST BORING REPORT

**Boring No.** B117
File No. 29761-001
Sheet No. 2 of 2

| Depth (ft.) | SPT[1] | Sample No. & Rec. (in.) | Sample Depth (ft.) | Well Diagram | Elev./Depth (ft.) | USCS Symbol | Visual-Manual Identification and Description (Density/consistency, color, GROUP NAME, max. particle size[2], structure, odor, moisture, optional descriptions, geologic interpretation) | Gravel % Coarse | Gravel % Fine | Sand % Coarse | Sand % Medium | Sand % Fine | % Fines | Field Test Dilatancy | Field Test Toughness | Field Test Plasticity | Field Test Strength |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| 20 | | | | | 20.0 | | BOTTOM OF EXPLORATION 20.0 FT. | | | | | | | | | | |
| | | | | | | | No refusal | | | | | | | | | | |
| | | | | | | | See MW Installation Report | | | | | | | | | | |

[1]SPT = Sampler blows per 6 in. [2]Maximum particle size (mm) is determined by direct observation within the limitations of sampler size.

**NOTE: Soil identification based on visual-manual methods of the USCS as practiced by Haley & Aldrich, Inc.**

# OBSERVATION WELL INSTALLATION REPORT

HALEY & ALDRICH

| | |
|---|---|
| Project | PROPOSED FOOD STORE |
| City/State | PORTLAND, MAINE |
| Client | HANNAFORD BROS. CO. |
| Contractor | MAINE TEST BORINGS, INC. |
| Driller | M. COFFIN |

| | |
|---|---|
| Observation Well | MW117 |
| Test Boring | B117 |
| Installation Date | 4-Mar-03 |
| Location | See Plan |
| H&A File No. | 29761-000 |
| H&A Rep. | D. Dearden |

Ground El. 46.0
El. Datum NGVD

SOIL/ROCK CONDITIONS
BOREHOLE BACKFILL
(Numbers refer to elevation/depth from ground surface in feet)
(not to scale)

SAND AND GRAVEL WITH BITUMINOUS CONCRETE

SAND
0.5

BENTONITE
2.5 — 2.5

FILTER SAND AND CUTTINGS

BROWN GRAVELLY SAND
4.6

5.5

BENTONITE
6.8

BROWN MEDIUM TO FINE SAND

FILTER SAND

Bottom of Exploration

Type of protective cover/lock: Master # 2396
Height of top of guard pipe above ground surface: 2.3 ft
Height of top of riser pipe above ground surface: 2.0 ft
Type of protective casing: Stand Pipe
Length: 5.3 ft
Inside diameter: 4.0 in.
Depth of bottom of casing: 3.0 ft

Seals:

| Type | Depth to top (ft) | Thickness (ft) |
|---|---|---|
| Bentonite | 0.5 | 2.0 |
| Bentonite | 4.6 | 2.2 |
| | | |
| | | |

Type of riser pipe: Sch 40 PVC
Inside diameter of riser pipe: 2.0 in.
Type of backfill around riser: Filter Sand/Cuttings
Diameter of borehole: 8.0 in.
Depth of top of well screen: 8.0 ft
Type of screen or manufacturer: Slotted PVC
Screen gauge or size of openings: 0.010 in.
Diameter of well screen: 2.0 in.
Type of backfill around screen: Filter Sand
Depth of bottom of well screen: 18.0 ft
Bottom of silt trap: 18.0 ft
Depth of bottom of borehole: 20.0 ft

(Depths refer to ground surface)

Remarks: 5 BAGS SAND, 1.5 BAGS BENTONITE

G:/Projects/29761/000/OWL-MW117.xls